MAY 1964
Vol. 9, No. 1
35 cents

Precision SHOOTING

a magazine for Shooters by Shooters

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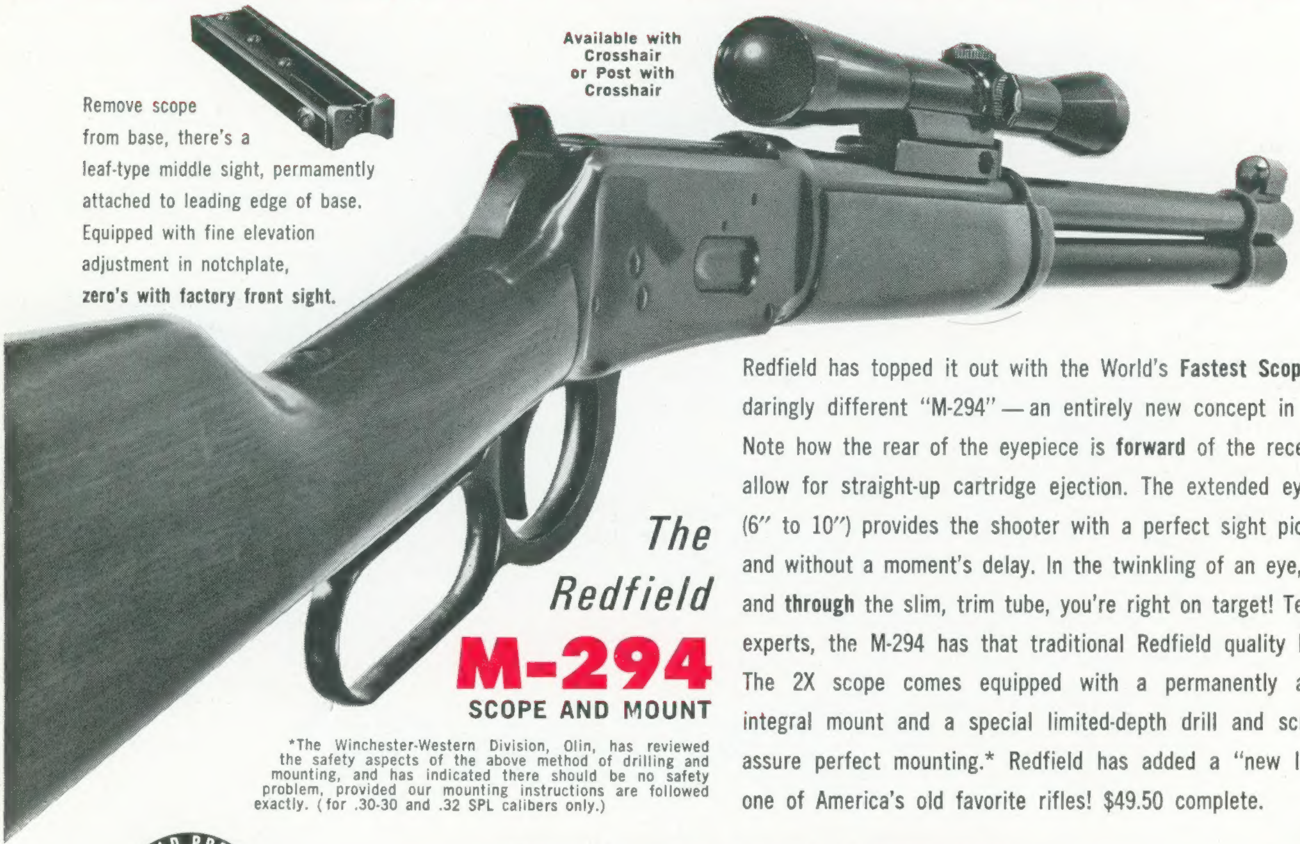

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*The Winchester-Western Division, Olin, has reviewed the safety aspects of the above method of drilling and mounting, and has indicated there should be no safety problem, provided our mounting instructions are followed exactly. (for .30-30 and .32 SPL calibers only.)

REDFIELD PRECISION R MEANS ACCURACY

"**Gunsmiths:** See our special for **you,** page 9."

REDFIELD GUN SIGHT CO.

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COVER PHOTO

The new rifle range of the West Texas Sportsman Club where the 1964 National Varmint and Sporter Rifle Championship Tournament (bench rest) will be held on August 7th, 8th and 9th.

The range is located seven miles northeasterly from the city of Abilene and on the east side of Lake Fort Phantom. Shown is the 20 bench covered firing line looking toward the 200 yard target line in a northeasterly direction, with the 30 X 40 foot loading shed in the rear.

The Club House and other ranges are located 200 yards west of the new range.

Information about accommodations, reservations, etc. may be obtained from J. L. Bonner, Box 606, Cross Plains, Texas 76443 or the Abilene Chamber of Commerce.

SAVAGE/ANSCHUTZ MODEL 64 TARGET RIFLE

The SAVAGE/ANSCHUTZ Model 64 Match Grade Target Rifle is a light weight (7¾ lbs.) .22 cal. rimfire rifle designed specifically for target shooting and priced, without sights, at $75.00 with right-hand stock or $85.00 with a left-hand stock.

The barrel is 25 inches long and is "free-floating." These Anschutz people make sure that a free-floating barrel **IS** free-floating before it leaves their factory. While the stock is machine inletted, there is evidence of hand-fitting and this is quite in evidence in the forward part of the forearm barrel channel of the sample rifle we have. The fit of metal to wood in the action area is very good.

This is a single-shot action, thus providing a maximum of solid wood in the action area. The action and stock are fastened together by a screw through the stock into the receiver ring and another through the rear of the trigger guard into the tang of the receiver. The front of the trigger guard is fastened to the stock with a wood-screw. The loading platform is flat with a groove in the center which serves the double purpose of guiding the cartridge into the chamber and a track for the guide-rib on the bottom of the bolt.

The bolt is a two-piece unit with only the rear section turning for locking and camming back the striker. The forward section, with twin-extractors, is flat on the bottom except for the guide rib. The butt of the bolt handle is the locking lug which came slightly into locking position. The bolt is well fitted with smooth, easy, non-binding travel.

The trigger is of the compound design similar to those used in most of today's top quality bolt action rifles; the trigger proper releasing the sear which is pushed down by the projection on the striker. The trigger is apparently adjustable but since I found no need for "improving" the trigger pull on the sample rifle, I did no monkeying around with it to find out what the adjustments were.

The stock is of excellent design, following the European design with the butt-stock contoured for comfortable fit of the trigger hand and comfortable cheekpiece. The pistol grip, checkered, is properly positioned, plumply hand-filling with the Wundheimer bulge to fill in the palm of the hand hollow. The forearm is full and comfortably shaped but without any exaggerated beaver-tail. A rail inletted in the forearm accommodates the sling swivel which is adjustable anywhere in a 6 inch travel range. The entire stock, for target work, is outstandingly excellent when compared with the clubby handles on most U. S. made rifles of similar type.

The rifle is equipped with bases for target scope mounts on the barrel, another such base at the muzzle for target front sights and the receiver top is grooved to accept the Anschutz micrometer rear sight and will accept scope mounts designed for this type of attachment. The left side of the received is drilled and tapped for attachment of Redfield sight base.

The limited test shooting had to be done outdoors in conditions that were not good for testing, and the writer is certainly no champion shooter. Under the conditions and recognizing my own limitations, I would judge the accuracy of the rifle quite satisfactory.

To sum it up, I would consider this rifle an excellent choice for training and early competition for older juniors of a size to handle the rifle comfortably. It would also be, in my opinion, an excellent choice for the adult wishing to start casual club target shooting with a reasonably modest investment for rifle.

Incidentally, and going off at a tangent, when I first tried the then new CCI high-speed 22 LR ammunition in my heavy match rifle I was quite disappointed with its accuracy performance. Even though others reported accuracy of the CCI ammo "nearly as good" as with match grade ammo, from my own experience I had to judge it just ordinary plinking ammo. However, in this SAVAGE/ANSCHUTZ rifle and using the same lots of ammunition, I obtained "**very** nearly as good" accuracy with the CCI high-speed as with the match grade ammo. This experience has further convinced me that it is unfair to severely criticize the reports of experiences of other shooter-writers whose experiences may have been governed by conditions entirely different than those you may have encountered.

P. H. T.

THE CROSMAN "TARGET 38"

The new CROSMAN "Target 38" CO2 gas powered pellet revolver has fully lived up to its good first impression. This gun, simulating very, very closely its prototype cartridge gun in weight, feel and sight equipment, delivers real target accuracy at the 20 to 25 feet ranges it is designed for.

Handgun target shooters of high sharpshooter and expert rating have had no trouble making dime-size and under 5-shot groups at 20 feet range in their first try of the gun. Shooting nearly 1000 rounds hasn't made this sub-tyro an expert handgun shot, but it sure has improved his efforts.

I am quite convinced that by permitting daily practice right in the home, this gun would be an aid to the aspiring handgun target shooter who has been limited to no more than one session a week of firing cartridge guns on the range. There are few apartments in which two adjoining rooms wouldn't permit a satisfactory range, and there isn't noise enough to annoy neighbors, even though separated by only an ordinary apartment partition. A wild shot would severely damage only a very fragile object—one might break the bare skin but would not penetrate deeply.

To test penetration, I folded a piece of ordinary package corrugated cardboard to four thicknesses and fired at it at 20 feet range. The pellet broke the surface of the fourth thickness but did not emerge. I then fired at a one lb. Edgeworth tobacco tin at 10 feet range. The pellet made a very shallow dent in the tin but did not mar the enamel finish on the can, and bounced back onto the floor.

The Target 38 gun should be excellent for the beginner training of a handgun shooter. The shorter barreled Combat 38 model should be equally effective for initial training and constant practice in police departments. Further, the accuracy of the guns could provide interesting target competition among social club members in the club rooms usually available to them. There would be no noise problem, inexpensive bullet traps could easily be provided and the shooting would be quite inexpensive—less than one cent per shot.

P. H. T.

THE BLUE TRAIL RANGE

Home of: The Conn. State Rifle & Revolver Ass'n. Shooters and families welcome—90 miles from New York World's Fair.
120 covered firing points—25 yds., 50 yds., 100 yds.—lighted.
50 pit operated targets at 200 yds. Shotgun area—Snack Bar—Lounge—Store—Rest Rooms. Send for free 1964 program and brochure.

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COMING MATCHES

(We will list place, date, type and title of match, name of sponsoring organization, name and address of contact person, at a nominal flat rate of $2.00 per insertion, prepaid with insertion order. Insertion orders must reach the Precision SHOOTING office, 64 Depot Street, Lyndonville, Vt., at least 45 days before date of match for single insertion orders. For multiple insertions, 30 days additional must be allowed for each additional insertion desired.)

Cedar Rapids, Iowa: July 26, The Cedar Rapids 2700 Pistol Tournament. Trophies for awards in individual and aggregate matches in all classes. Write Paul Kosek, Sec'y, Linn County Rifle & Pistol Club, 87 16th Ave. S. W., Cedar Rapids, Iowa.

LYMAN RELOADING HANDBOOK

43rd Edition

The 43rd edition of the Lyman Reloading Handbook is just now available and may be obtained from shooting supply dealers at $2.50 per copy.

The entire format of the book is quite different from former editions and, in this writer's opinion, it is a decided improvement. The book covers reloading information, with load data, for rifle, pistol and shotgun cartridges, and loading for muzzle-loader rifles and handguns as well.

There are no "articles" by contributing authors and the greater part of the 220-odd pages are devoted to useful information for reloaders and shooters.

The arrangement of the loading data for all types of cartridges is quite different from former editions and, in our opinion, is a convenience improvement. The rifle reloading data appears to be quite thoroughly revised and brought up to date. In numerous cases maximum loads hvae been reduced from those listed in earlier editions, and from our experience this seems a wise move. Loads are listed for more of the Hodgdon powders than in earlier editions.

There is no loading data for any of the wildcat rifle cartridges. There is absolute impartiality in this respect—there is not even any load data for the "K"-series of "improved" cartridges and the originator of those cartridges, Lyle Kilbourne, has been on the Lyman staff for a number of years. Also missing is load data for most of the "short magnum" cartridges—the .264 Win.,

(Continued on Page Four)

Lyman Handbook

(Continued from Page Three)

.458 Win. and 7mm Remington Magnum being the only exceptions.

There is a very complete section devoted to cast bullets with some 10 pages filled with cast bullet load data for all the popular rifle calibers.

There are 10 pages of load data for handgun cartridges, all for cast bullet loads. There is no load data for any of the jacketed handgun bullets.

A desirable new feature of this handbook is a sketch of each rifle and handgun cartridge listed with all major dimensions indicated.

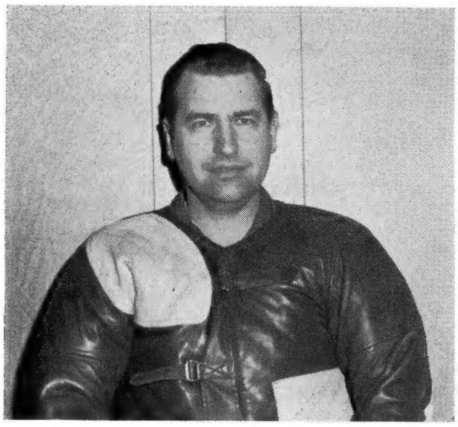
While this writer is totally inexperienced in shotshell reloading, it would appear that this department is quite comprehensive and that the beginner who would read, digest what he reads and follow the instructions and information given, should have no trouble with this reloading. (That of course also applies to the rifle and handgun reloading as well.)

There are 16 pages of loading data for shotshells, covering the .410, 28, 20, 16, 12 and 10 gauges with the various shell lengths for each gauge.

In this writer's opinion, up to date loading manuals are necessary items of equipment for the responsible handloader, and this 43rd edition of the Lyman book is a replacement that should be acquired as soon as it may be convenient.

P. H. T.

TOURNAMENT CIRCUIT



Duane Jenner, secretary of the Modesto Rifle Club, (Calif.) and winner of the NRA Sectional Gallery Rifle Tournament at Modesto, April 18 and 19.

MODESTO, CALIFORNIA

On April 18th and 19th the Modesto Rifle Club held the NRA Open Sectional Gallery Rifle Tournament. There were 74 competitors that traveled from as far north as Willows, Calif.; east from Reno, Nevada; south from Avenal, Calif. and west from San Francisco.

Bill Rusk, Steamboat, Nevada, who placed second in the nation last year, yielded first place to Duane Jenner of the Modesto Club. They both had possibles prone and sitting, and then came kneeling. Rusk came off the line only one point down and Jenner lost four. It looked like Rusk was going to win the match when he posted a 194 standing for a total of 793. The Jenner (on the second relay) came off the line, sweat on his brow and a smile on his face—he had a 197 standing, giving him a total of 793. This tied Rusk but the high standing gave Jenner the win.

Clifford Block had 789 and Clinton Block 786, both shooters from Reno, Nevada. William Real, San Francisco, was high Expert with 784, eleven points ahead of Bill Cary from Stockton, Calif. Bob Kolbet, Reno, Nevada, was high Sharpshooter with 755 and Charles Dienda, Sparks, Nevada, high Marksman with 731.

Winning team was Silver Sage #1 from Reno, Nevada, with a 1558 score, which beat the Modesto Rifle Club #1 team by a 5 point margin. Members of the Silver Sage team were Elwood Block 396, Clifford Block 393, Clinton Block 387 and Bill Block 382.

June Christian, 14, Mayville Junior Rifle Club, shot a perfect 200 score to lead in indvidual honors at the 10th annual Milwaukee Sentinel Junior Rifle Championships at the Milwaukee Sentinel Sports and Boat Show, March 14-22.

MILWAUKEE, WISCONSIN

Celebrating its 10th annual competition, the Milwaukee Sentinel Junior Rifle Championships saw precision shooting by teams from one school and a perfect score by a 14-year old girl as 130 teams competed with 79 firing in a specially constructed range at the 24th annual Milwaukee Sentinel Sports and Boat Show at the Milwaukee Arena and Auditorium, March 14-22.

The Cottage School Junior Rifle Club dominated the field, shooting 789 for first place in class B and chalking up 731 for second place in class A. Downers Grove, with 746, captured first place honors in class A.

In class A Military competition, the 733 posted by the Rockford East Senior High School ROTC topped the list. In girls' team competition, first place in class A went to the West High School Girls' Junior Rifle Club, shooting 709; the Benoit Jills' 757 took first place in class B.

The perfect score of 200X200 posted by June Christan, Mayville Junior Rifle Club led in individual scoring honors.

In special ceremonies at the stage-tak show, the National Rifle Association and the Milwaukee Sentinel presented certificates to nine clubs and fourteen individuals for 10-year participation in the Junior Tournaments. Charles D. Collins, Director of the Sentinel Sports Show, credits much of the show's success to the tournament and already is looking forward to next year's competition.

FORT BENNING, GEORGIA

The Third U. S. Army Rifle and Pistol Matches were fired at Fort Benning, May 4th through 8th, with sunny, warm weather throughout the period. Good scores and keen competition for winning spots featured the matches and indicate tough competition in the All-Army matches in June and strong Army teams for the National Matches.

Sample winning scores for rifle were: National Match Course 246-20V, Leg Match 248-20, Rapid Fire aggregate 396-21V followed by 395-27V and 395-23V, Off-hand aggregate 194-7V.

For pistol: Center fire aggregate 875-29x, .45 cal. aggregate 866-33x, Grand aggregate (2700 point) 2619-103x and 2617-107x. Leg Match 294-9x followed by 291-13x and 291-11x.

1000 YARD MATCH AND V. I. P. E. TARGET

By Dermot C. Reilly

The Troop 36 third 1000 yard Registered Open Tournament, which in previous years had been the occasion of record scores, was fired under conditions of rain, wind, fog, haze and general discomfort on September 28 and 29, 1963 at Karner Range, Albany County, New York. The shoot was a 120 shot affair with unrestricted rifles featuring 10 and 20 shot iron and any sight matches on the "C" and the new Value Inversely Proportional to Error (V. I. P. E.) targets, and was co-sponsored by Troop 36 (Vincentan Institute) Boy Scouts and the Capt. William Dale O'Brien Detachment Marine Corps League.

Gerry Stekeur of Latham, N. Y. and Creighton Audette of Springfield, Vermont see-sawed for first and second places throughout the tournament except for a single second place copped by John Neuman of Glendale, N. Y. Audette, though somewhat outgunned when his new .30 Magnum acted up forcing him to continue with a .30-06, made Stekeur work hard all the way for the $125.00 top money spot.

The V. I. P. E. target was developed to provide a more refined criterion for long range shooting proficiency than the "C" target, which, except for the introduction of the V-ring and reduction and optional omission of the deuce panels, has gone unchanged for approximately ninety years. The new target's design is based on the assumption that a one foot dispersion at 1000 yards is best consistent grouping of which the combination of a first-rate rifleman using first-rate equipment and the best available ammunition components in the prone position under ideal (or perfectly doped) conditions is capable. This was assigned the value 10. Each outer ring diameter is equal to ten times the size of the 10 ring divided by the value of a shot in such ring, with corrections for an assumed .30" bullet diameter. The periphery of the 10-ring is .75" in width to provide a scope aiming point capable of being centered on regardless of spotter position. The aiming bull, consisting of the 10 to 3-rings inclusive, is 40" in diameter. Mechanical limitations set the size of the 1 scoring area at 73" X 73". It is thought that the new target provides as close to a mathematically linear index of the comparable excellence of scores as can practicably be designed. It is marked in the same manner as the International Target. To have a significant aggregate of scores on both targets, those on the V. I. P. E. target were computed logarithmically. A picture of the new target with a dollar bill in the center appears herewith. The first and second place scores were:

V. I. P. E. Target

Match #1	**10 shots Iron sights**
Stekeur	80
Neumann	57
Match #2	**20 shots Iron sights**
Audette	141
Stekeur	132
Match #3	**10 shots Any sights**
Audette	71
Stekeur	63
Match #4	**20 shots Any sights**
Stekeur	129
Audette	104

"C" Target

Match #5	**10 shots Iron sights**
Audette	50-6V
Stekeur	49-7V
Match #6	**20 shots Iron sights**
Audette	99-12V
Stekeur	98-11V

The V. I. P. E. 1000 yard target developed by Dermit C. Reilly of the Forbes Rifle Club, Albany, New York. A one dollar bill is pasted in the center of the target to show comparative proportions. Reilly (left) and John Spain of the Forbes Club are holding the target.

Match #7	**10 shots Any sights**
Stekeur	50-7V
Audette	50-4V

Match #8	**20 shots Any sights**
Audette	99-15V
Stekeur	98-15V

Match #15—Adjusted Grand Aggregate. Aggregate of scores fired in matches 5, 6, 7 and 8 plus 150 times the common logarithm of one sixth of the aggregate of scores fired in matches 1, 2, 3 and 4:

Stekeur	569.8765
Audette	566.6830

REMOVING LEAD WITH MERCURY

By Jesse M. Grigg

After several years' use a .22 cal. match bore which has not been lapped or treated with mercury will be leaded at both breech and muzzle over a distance of several or more inches. The inevitable pocket in the mid-region may hurt the shooting and indeed permit gas cutting due to blow-by. If gas cutting occurs and is allowed to continue, then the bore may be restored only by lapping it to a larger diameter.

Granted that the bore has not been damaged, then removal of the lead is all that is needed to recondition it. Removal may be done with mercury in a simple and not overly expensive procedure.

A drug store should retail mercury at not over one dollar per Av. ounce, and four ounces will remove lead several times if not too much is lost in waste. For a few cents several small corks may be had in a hardware store. One of them worked down will be used to plug the breech tight enough to hold mercury, which is quite tight, as mercury is hard to confine.

Before the plug is inserted the bore should be cleaned with a powder solvent, then wiped dry. The cork plug may be roughed to shape with a sharp knife, then be finished to oversize with a file, all of which is easily and quickly done. Much taper is needed to enable the cork to start in the chamber, but once entered it may be driven in farther with a light hammer and a piece of soft wood for driver. To prevent leakage the substance of the cork should be much compressed, but not enough to risk stretching of the chamber where metal is cut away for extractor slots. Heavy grease such as Rig may assist entry of the plug as well as help to prevent leakage.

Before attempting to pour wrap a rag around the barrel just ahead of the forestock to avoid loss of spilled mercury in the stock groove and action. In lieu of a ready-made funnel for pouring, a makeshift may be fashioned of plastic, binding the convolution with Scotch tape while the pointed end is in the muzzle. In pouring have the rifle butt resting on a wide open newspaper so that what is spilled or leaked may be rounded up and saved. A one pound empty coffee can or equivalent is a useful adjunct for receiving what is rounded up as well as for future storage of the miscellany; though, as mercury will soon leak through soldered seams, in storage it should be kept in the bottle.

Lead amalgamates with mercury as does sugar with water when both are in the same container. So, after mercury has been in contact with barrel lead a short time, the two may be poured out as one. With a depth of only a few inches in the barrel, the whole bore wall may be "wetted" by holding a finger over the muzzle and repeatedly upturning alternate ends, meantime rotating the barrel. After some minutes the mixture is poured out, saved for the next time, and the bore is wiped with a dry patch to remove the residue.

If it be more convenient, instead of upending the barrel, one may cautiously push in a brass or aluminum cleaning rod and raise the level until mercury is in contact with all the bore wall at once. Carefully churning the rod up and down will hasten the process of dissolution. Tests indicate that no damage will be done to rods of brass or aluminum. The globules of mercury which likely will adhere to the rod after it has been withdrawn may be jarred off more easily than wiped off.

An illustration of what to expect is given in the following. A 52-C barrel which had been used regularly in matches for maybe three years without lapping or otherwise freeing it of lead was slugged. Lack of resistance to the slug in the mid-region indicated the inevitable pocket. The slug emerged with a .2220" diameter. After the mercury treatment no variation in diameter could be felt in resistance to another slug, this indicating that the pocket was gone. This slug came out with a .2222" diameter. The difference between the diameters of the before and after slugs indicated that a deposit of .0002 of lead had been removed, which amount had accumulated notwithstanding a cleaning after every shooting period and the use of a wire brush about once per carton of ammunition.

LEAD

By Fred W. Hallberg

George Bjornstad's warning in the March issue of P. S. brings to mind some questions that have long bothered me. These questions relate directly to the melting and casting of lead.

I am not a metallurgist. However, I have searched through a number of textbooks for information concerning lead and nowhere have I found anything to satisfy my curiosity. Booklets put out by our mold manufacturers and shooting organizations are just as barren. Nowhere is the subject matter even hinted at. Perhaps some reader of this journal can produce the necessary answers to my questions.

When my mass of scrap lead of unknown composition is first reduced to a primary ingot, a great deal of dross and dirt floats to the top and is skimmed off. Incidentally, this first reduction is always done outdoors because odors from impurities, dirt, and combustible material would otherwise fill the house. The ingot is allowed to cool and subsequently removed by tipping the pot over. When this is done, a heavy coating of (presumably) carbon is left on the inside of the pot. It remains despite the fact that the metal has been well stirred. Why does it not float to the top? The same question applies to hard abrasive materials left in the melt. Do they not float to the top so that they can be skimmed off? If not, why not? They are lighter than lead.

My next question concerns flux. What is it and what does it do? We all know it makes lead flow and cast more easily. But why? We drop a piece of wax, or grease, or tallow onto the hot lead. Upon contact, this combustible material bursts into flame or smoke and disappears in moments. As far as I can determine, nothing has been added to the mix itself that could possibly remain more than an instant. When such a combustible flux is added, what physical or chemical change occurs in the molten mass? Are the lead molecules in some way lubricated? If so ,how? Does flux by any chance remove oxygen? How can combustible flux remove anything that is not on the surface of the melt?

As noted above, my first melt into the basic ingot is done outdoors. The piece can then be later remelted and cast into electric pot size ingots for casting bullets. This remelt can be accomplished without objectionable smells or smoke. But fluxing with combustible fluxes is still a problem. In my search for a smokeless and noncombustible flux an engineer friend suggested I try arsenate of lead. This is most readily procured at a garden supply house as a plant dusting compound. As such it usually is mixed with a pinkish dye for ready identification. Arsenate of lead proved to be an excellent flux, odorless and noncombustible. The dye creates a tiny wisp of odorless smoke but not enough to be objectionable even if you did your casting right in the living room. Only a quarter teaspoon is necessary per flux. Drop it on the melt and stir with an appropriate spoon. I say appropriate because I once picked up a dirty corroded looking spoon in my basement and proceeded to stir my melt with it. To my surprise, the spoon disappeared. Unknowingly, I had found and destroyed a sterling silver spoon. The resulting bullets shot quite well.

Never breathe in vapors arising from lead or lead compounds. One reason our duck population over the central flyway

(Continued on Page Eighteen)

USES OF LYE IN THE RECOVERY OF BULLET TRAP METAL

By A. J. Hammer

Several years ago the writer had an opportunity to buy a quantity of bullet alloy which had been recovered from the bullet traps on the local club range. This material when received, was of various degrees of fineness, some fairly large fragments but the greater amount was in the form of a finely divided powder. Most of the bullets which had been fired into the traps during the period that this material had been collected were from .22 rifles and the bullets had been almost completely shattered.

When attempting to melt down this material, there was considerable disappointment in obtaining a very low recovery of metal and high percentage of powdery material. When heating the bullet trap metal, a Lyman-Ideal ten pound melting pot was used and the source of heat was a Fisher gas burner. A Lyman-Ideal pouring ladle was used for skimming the powder and dross from the surface of the metal.

The material skimmed off the molten metal was saved with the thought of trying to find a way of recovering more of the metal since less than half of the original weight of bullet trap metal had been recovered. In order to obtain a more homogeneous material for later experiments, a few pounds of the powder and other skimmings were sieved and that portion which passed through a 35 mesh sieve was saved for the experiments.

When the 35 mesh material was examined under a miscroscope, each particle appeared as a sphere of metal partially covered with a layer of oxide. A reasonable explanation for loss of so much metal during the attempt to melt down the bullet trap metal seemed to lie in the fact that during the heating of the material, a considerable amount of the fine powder was partially oxidized. Although the temperature was above the melting point of the metal, the particles were covered with sufficient oxide to prevent them from congealing. It followed that if the oxide layer could be removed, or prevented from forming, a much higher recovery of bullet trap metal could be obtained.

Lead oxide can be melted and if the temperature is sufficiently high, the lead oxide coating on the metal fragments can be melted or softened enough so that when the contents of the pot are stirred, the lead will accumulate under a layer of molten or pasty oxide. This requires a temperature of 1616° F. or higher which is not practical for use by the average hand loader.

A few hours of library work yielded a reference[*] to an article which was concerned with the removal of impurities from a defective linotype metal. Melting the linotype metal under a layer of molten lye was found to free the metal from the contamination, which included oxides. This suggested that molten lye might be the answer to the problem of increasing the per cent recovery of bullet trap metal and might also be of use for other purposes by the handloader who casts his own bullets.

When describing the following experiments to several shooters and handloaders, the writer learned that others have used lye in the preparation and cleaning of bullet alloys. To this writer's knowledge, these uses of lye have not been made available to handloaders through articles in The American Rifleman or other magazines of interest to the shooting fraternity. The use of lye in the lead industry is not new. Several patents have been issued on methods of treating lead alloys in the molten condition with mixtures of lye and other chemicals for the purpose of removing various types of impurities.

Although lye is one of the more important industrial chemicals, it is also a rather common household chemical. Chemically, it is known as sodium hydroxide and is represented by the chemical formula $NaOH$. It is sold under a number of trade names such as caustic soda or lye and when it is to be used for a certain specific purpose in the home, it may be packed in a more attractive container, given a more appropriate trade name and sold for a price considerably in excess of the price of the same product packed under the name of lye. The lye used in these experiments was obtained at a local grocery store at the price of 21 cents per can of 13 ounces.

Equipment used in the experiments. Note the Fisher burner and plastic spoon for measuring the lye.

Like most chemicals, a considerable savings may be had when lye is purchased in quantity. A technical grade, sufficiently pure for this purpose, can be obtained for prices varying from $5.00 to $7.00 per hundred pounds.

Before describing the uses of lye in recovering bullet trap metal, a few words of caution are necessary for those who may wish to use this chemical. Lye, or caustic soda, is a caustic material as the name suggests. It is usually used in the home when dissolved in water and the resulting solution can cause severe caustic burns when it comes in contact with the skin. The lable on a can of lye gives instructions in red ink concerning precautions that must be observed when using it as a household chemical.

In addition to the precautions given on the can, the bullet caster must take additional precautions since he will be working with the lye in a molten condition. The melting point of lye is only about seventeen degrees below the melting point of lead. Contact of a drop of molten lye with the skin will produce a heat burn about as serious as a drop of molten lead, but in addition the molten lye will stick to the skin and produce a caustic burn which can be more serious than a heat burn.

Handbooks on handloading recommend that gloves be worn when working with molten bullet alloys. If this advice is followed, the hands should be sufficiently protected from splashes of molten lye as well as from molten lead. This writer prefers leather gloves to the cotton variety when working with molten lye.

Those of us who normally wear glasses usually have sufficient eye protection when working with bullet metal. Although the splashing of molten bullet metal is not usually considered to be a hazard during the operations of preparing bullet metal and casting bullets, there have been several occasions when the writer was thankful for those lenses of glass between his eyes and a drop of molten bullet metal. Safety glasses or shooting glasses should be worn at all times when working with lye by those who do not already have sufficient eye protection.

Molten lye is more fluid and of less density than molten bullet metal, therefore it has a greater tendency to splash when poured from one container into another. For this reason, it is desirable to use a minimum amount of lye so as to avoid having very much of it in a highly fluid condition.

Lye is neutralized by acids so a dilute solution of vinegar should be available for neutralizing any of the lye which gets on the hands. This applies particularly to the lye solution which is formed when it is necessary to wash spilled lye from metal ingots or other surfaces.

Lye has the property of absorbing moisture and carbon dioxide from the atmosphere. Small flakes of solid lye will absorb sufficient moisture from the atmosphere to dissolve themselves forming a lye solution which is strong enough to produce a caustic burn on the skin. This solution will also remove paint and varnish from wood surfaces. Any lye spilled during the entire operation should be cleaned up immediately using the dilute vinegar solution.

The lye container should be kept tightly closed except when the contents of the container are being removed. In addition to contamination of the lye by atmospheric moisture, a chemical reaction with the carbon dioxide in the atmosphere will convert the lye into sodium carbonate which has a melting point almost 1000° F. above the melting point of lead.

Recovery of Metal from 35 Mesh Powder. The first experiment in which lye was used was an attempt to recover the metal from the 35 mesh material which had been saved from the attempt to melt down bullet trap metal. The proportions of metal powder to lye used was 2.2 pounds (one kilogram) of powder to 3 ounces of lye. This mixture was heated in the ten pound Lyman-Ideal melting pot. Considerable molten metal accumulated under a layer of highly viscous material when the contents of the pot were stirred with an iron rod. The viscous or pasty material on the surface of the metal consisted of molten lye, lead oxide and products of the chemical reactions between the lye and oxides. The amount of lye was not sufficient to produce a fluid layer on the surface of the metal so the metal could be easily poured into an ingot mold by holding back the viscous material with an iron rod. In this experiment, 1.54 lbs. of metal were recovered.

Examination of the viscous material showed that it contained a considerable amount of metal in the form of round, clean spheres so the recovery of the metal in this experiment was not complete. The material was scraped out of the melting pot on a piece of sheet iron and allowed to cool. It was then dropped into a can of water where it was allowed to soak over night.

Lye and the products of the chemical reactions between lye and oxides are soluble in water. After soaking over night in water, most of the material had disintegrated, leaving the spheres of lead in the bottom of the can in a mud of oxide which had not reacted chemically with the lye. By stirring the contents of the can, and at the same time allowing a stream of water to flow into the can, the lead oxide was washed out, leaving the spheres at the bottom. The spheres were then poured out of the can on a pile of folded newspapers and allowed to dry.

The solution formed when the viscous material is soaked in water is quite caustic and will attack enamel or glazes on sinks, pans, etc. For this reason, this operation should be carried out in large tin cans which can be discarded after they have served their purpose. A stream of water from a garden hose works nicely when washing the oxide from the lead spheres. The solution may kill vegetation, however, so if this step is conducted on a large scale, it should be done where there is no grass.

The dried lead spheres recovered in this experiment contained some hard material that had not disintegrated completely when soaking in water. The entire mixture was returned to the melting pot, a little lye added and the mixture heated as before. This time 0.12 lb. of metal was recovered, making a total of 1.66 lbs. recovered from 2.2 lbs. of the 35 mesh material. This corresponds to 75.4% recovery and since the material used in the experiment had been partially oxidized before the experiment was begun, this high recovery was considered rather good because it was obtained from material that formerly would have been thrown away as trash.

Recovery of Bullet Trap Metal.

In the next experiment, it was decided to find out if lye would increase the percentage recovery of bullet trap metal. The material used in this experiment had previously been run through a 10 mesh sieve to separate as much of the coarse material as possible since this could be melted and the metal recovered without any great loss.

In order to determine the effect of fineness of the metal particles on the per cent recovery of metal, both with and without the use of lye, the entire batch of 10 mesh powder was separated into four fractions by the use of sieves of different meshes.

Table I gives the results of the sieve analysis. This shows that about one third of this material was in the form of extremely fine powder and explains why it is difficult to melt this material down and obtain a high per cent of metal recovery. The oxidation of metal is strictly a surface reaction and the more surface exposed to the air, the more rapid will be the oxidation at any temperature. The fine powder oxidizes more rapidly at the melting temperature of lead, probably converting most of the powder to lead oxide. Some of the coarser particles will partially oxidize at this temperature and will form small droplets or spheres of molten lead covered by a protective coating of oxide. Still larger particles will also partially oxidize but due to their size, the protective layer of oxide will break, allowing the drops to congeal and flow toward the bottom of the pot. Stirring the contents of the pot during heating of lead particles of different sizes helps to break the oxide layer on larger particles but appears to have little effect on breaking the oxide layer on smaller particles.

In each of the following experiments 2.2 pounds (one killogram) of metal powder was used. When lye was used, about one level teaspoon full of lye was first placed in the bottom of the pot and the metal powder placed on top of the lye. When heated, the lye melted first and worked its way upward through the powder. When the molten lye appeared around the edge of the metal powder, the contents of the pot were stirred with an iron rod to mix the lye and powder as much as possible before the melting point of the metal at the surface had been reached.

Table I.
SIEVE ANALYSIS OF BULLET TRAP METAL

Through 10 mesh, on 20 mesh	17.80%
Through 20 mesh, on 35 mesh	25.40%
Through 35 mesh, on 100 mesh	25.40%
Through 100 mesh	30.80%
Lost during analysis	0.60%

Table II.
RECOVERY OF BULLET TRAP METAL

	On 20 mesh	On 35 mesh	On 100 mesh	Through 100 mesh
With lye	99.6%	98.9%	96.5%	91.0%
Without lye	83.1%	76.1%	57.3%	17.0%

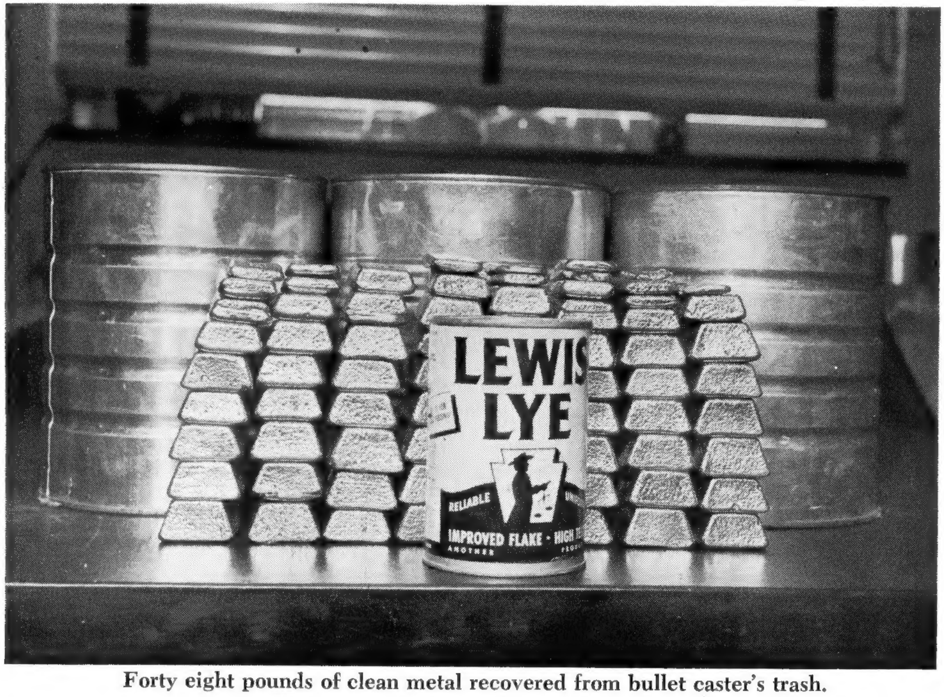
Table II gives the results of the experiments on the four fractions of bullet trap metal when heated with and without lye. The amount of lye used was more than was needed with the first two fractions (on 20 mesh and on 35 mesh). In the presence of a level teaspoon full of lye the entire contents of the pot melted to a fluid condition. When the metal was poured into the ingot mold, some of the molten lye also flowed into the mold and it was necessary to soak the ingots for some time in dilute vinegar solution to wash them free from the lye.

The amount of lye was about right for the third fraction (on 100 mesh) but was not enough for the finest fraction (through 100 mesh). An additional heaping teaspoon full of lye was necessary before a satisfactory separation of the metal from the oxide could be obtained. If this amount of lye had been used originally on this fraction, the per cent of recovery of metal would probably have been somewhat higher. The small amount of lye used during the first heating was not sufficient to prevent oxidation of a considerable amount of the powder.

Recovery of Metal from Bullet Caster's Trash.

Over a period of two years the writer had collected three large cans of dross,

(Continued on Page Eighteen)



Forty eight pounds of clean metal recovered from bullet caster's trash.

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*Quadrant, O. and Suchy, V., A Study of Type Metal, **Compt. rend. 17me Congr. chim. ind.**, Paris, Sept.-Oct. 1937, pp. 655-66.

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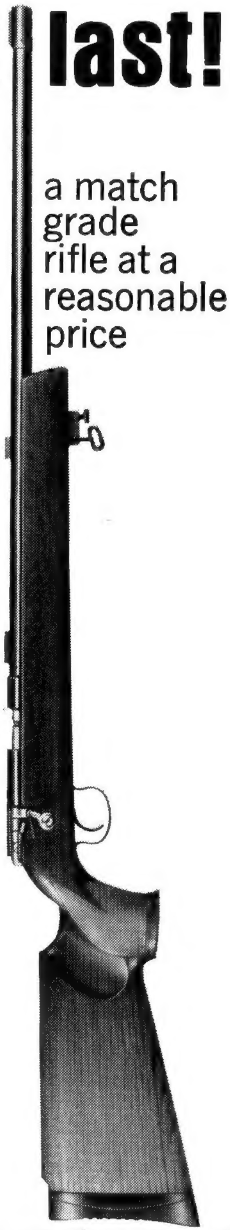

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Random Shots

By Betty Summerall Duncan

(Continued from April)

The revival of the **National Mid-Winters** at St. Petersbugr on March 10-13 attracted an even 100 from 14 states. Joe Steffey and Don Minor flew in from Illinois, Al Freeland drove down, and the presence of many other St. Pete regulars—7 from Ohio, 5 from Pa., etc.—helped to recapture the spirit of former years.

National Champ LONES WIGGER demonstrated his top form in sweeping the doubleheader. He rolled up a 785-46X National Mid-Winter **Position Championship** win. Then, borrowing a 52-D from Winchester's Max Thompson, Lones overcame the obstacles placed in his path by Capt. Verle Wright and Herb Hollister and triumphed in the National Mid-Winter **Prone Championship,** aggregating 3195-243X. Wigger now owns the rifle. It was too hot to pass up.

Eavesdropping department — Max Thompson ribbing Dan Carroll: "I didn't want Wigger to shoot the rifle. It wasn't even tuned!"

Wigger had a field day in the position matches, winning 3 out of 4—all metallic. In the **prone** match, his 200-19X edged Kendall's 200-18X and Don Adams' 200-16X. Hi Civilian—Augie Westergaard—199-15X. . **Standing:** Wigger—188-5X, Kolstad—187-4X, Boyd—186-3X. Civilian—Westergaard—174-1X . . . **Sitting:** Sgt. Ray Green, USMC—200-14X, Krilling—200-13X, Kendall—200-12X. Westergaard—193-7X . . . **Kneeling:** Wigger—199-10X, Hill—197-9X, Boyd—197-7X. Westergaard—191-4X.

Runners-up in the **Position Agg.** were Kolstad—781-36X, Boyd—781-36X, Green—778-41X, Hill 775-42X, Krilling—775-40X. . . Civilian: Westergaard—757-27X. Expert: Sgt. Ralph L. Harris, Aberdeen Proving Ground, Md.—752-19X.

The 4-position team match went to the USA Red team of Wright, Krilling, Adams, and Foster, scoring 1567-83X, over the Army Blue team's 1565-81X, and the Marine Corps' 1565-79X.

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Checking the individual prone matches, the heat was on as Hollister won the **50-yd.** metallic with 400-33X. Dingman—400-31X, Kendall—400-30X, Wright—400-30X; Summers, Jim Morris, and Green—400-29X. . . . At **50-meters,** Pres Kendall was on top—400-32X. Wright—400-30X, Wigger—400-29X, Kennerly—400-28X . . . The **Dewar** went to Ed Summers' 400-30X. Krilling—400-27X, Kolstad—399-31X; Wigger and Wright—399-27X . . . Verle Wright led at **100-yds.** —398-26X; Wigger—398-24X, Hollister—398-22X, Kolstad—397-21X, Krilling—397-20X.

The "Old Pro," **Capt. Verle Wright** out-X'd Wigger for the **Southeastern Smallbore Championship,** the metallic sight aggregate, 1597-113X to 1597-106X. Third place went to Bill Krilling's 1593-98X. Kendall—1592-107X; Hollister and Ed Summers—1591-111X.

Putting on the scope, Wigger was shooting for X's. He took the 50-yd. with 400-38X, followed by Kendall's 400-35X. It is with particular pleasure that I report the High Civilian's score, for Ken Recker of Winter Haven is a family friend of longstanding. A veteran Int'l Team shooter, Ken never ceases to amaze newcomers to the shooting game with the appearance of his rifle. Furthermore, it shoots. Pres Kendall designed his stock to be the ugliest on the line—but, Pres, you lose to Kenny. People used to make fun of my father's stocks, too, all doctored up with plastic wood—but, when they saw him shoot, they stopped laughing! Getting around to giving you Recker's score, he Creedmoored Doc Kennerly with 400-34X . . . Wigger was still going strong in the **meter,** his 400-37X taking Hollister by an X. Kennerly had 400-32X, Roy Oster and Kolstad, 400-29X . . . It was Wigger again in the **Randle Trophy Match,** the 100-yd., scoring 399-30X. Harry Frietchen, of Mansfield, Ohio, ran second with 399-27X. Hollister posted 399-25X, followed by Kennerly and Jim Morris with 398-33X and 398-27X. (We specify which Morris to distinguish between our good friend Charlie Morris from Pittsburgh.)

In winning the 2-man team match at 100-meters, any sights, **Gene Kolstad** and **Lones Wigger** established a new National Service Record with their 798-48X. I must compliment George Kuch, NRA Official Referee, for being on the ball. This record has already been recognized. Second was Hill and Boyd's 797-45X. Hollister and Summers atemed up for High Civilian—797-43X. Since it was required that teams represent the same club, these two Int'l Prone Team members shot for the City of Birmingham, England, Rifle Club.

Western Wildcats Champ, **Herb Hollister,** upheld his title by winning the **U. S. Trophy Match,** the Any Sight Aggregate, totaling 1599-128X. Wigger's 1598-137X was good for second place. Otherwise, civilians were in the forefront as Jim Morris' 1597-125X, Oster's 1597-106X, Kennerly's 1596-132X, and Frietchen's 1596-120X outranked the military.

I am favorably impressed by the planning which went into this program. There was an **ISU Fund Match,** a 50-meter aggregate, won by Wigger's 800-66X. Wright's 799-57X, Hollister's 798-67X and Frietchen's 798-64X followed.

The **Florida State Smallbore Association Match** was also taken by Wigger—797-54X. Hollister placed second with 797-47X. Wright and Krilling scored 795-51X and 793-45X.

Wright won the **Sam Bond Trophy Match,** a Dewar Aggregate—799-60X over Dave Boyd's 799-50X. The following had 798's: Jim Morris—64X, Summers—64X, Wigger—59X, Hill—57X, Krilling—56X, Adams—48X, Westergaard—48X.

Rounding out the National Mid-Winter Prone Championship are Verle Wright—3191-227X, Herb Hollister—3190-239X, Jim Morris—3186-226X, Bill Krilling—3185-209X, Pres Kendall—3182-223X, Ed Summers—3181-217X, Dave Boyd—3180-206X, Roy Oster—3180-199X, Dr. Kennerly—3179-230X, and Harry Frietchen—3179-219X.

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1961 Nat'l Smallbore Prone Champ VIC AUER flew from Calif. for the **Silver Dollar Roundup** in Winter Haven, held March 14-15. Shooting only the prone matches, he turned in a very profitable day's work. It was a most interesting tournament, from the human interest angle. Pres Kendall had been having difficulty with his prone rilfe, so when Vic arrived, he asked if Vic had an extra rifle which he could shoot. Vic obliged by offering Pres his 40X National Championship award. It was an all-scope course, to enable some of the old timers to compete. In the first stage of the 50-yd. match, both Vic and Pres fired 20X possibles. That rather takes care of Vic's alibis for a while . . . In Creedmooring Wigger and Ray Green's 400-37's, Auer tied Wigger's **National Reserve Record.** Hollister, Steffey, and Sfc. Leonard W. Willis, USA, turned in 36X's. (Of course, Auer still holds the Junior Record with 400-40X—20X.)

The 50-meter went to Kendall's 400-37X, with Vic trailing—400-34X. Military winners were Wright—400-33X and Green—400-32X. High Civilians: Francis Van De Water—400-32X; Martha Kelley—400-31X.

Prevailing winds were from 6 o'clock, shifting from 5 to 7 o'clock, at 20-25 mph. On the right end of the range, mirage was more easily read because of the white sandy bank. Firing from the middle of the range, Vic shot the 100-yd. stage of the Dewar during the 5-minutes when he was able to see the mirage. He won it with 400-34X. Civilian winners were Clifford N. Davis—400-30X and Bill Hawdershelt, Morgantown, West Va.—400-30X. Among the Military, Wright outranked Ainscoe's 400-29X. Boyd was 3rd with 400-21X . . . The 100-yd. match told the story. It went to Hawdershelt's 399-30X. Military leaders were Jordan—399-29X, Kendall—399-27X, Wright—398-25X. Among the civilians, Expert Ed Takahashi placed 2nd, scoring 399-23X. From Los Angeles, Ed accompanied Vic Auer and fired his first tournament less than a year ago. He is to be commended for doing so well in the roughest match in that fast company. Martha Kelley came in 3rd with 398-25X, followed by Auer's 398-24X.

Firing 800-63X, **Pres Kendall** and **Verle Wright** annexed another National Service Record in the 2-man team Dewar any. Pres ran out of Remington (the lot he used to win the Nationals) with 2 shots to go, and borrowed some Mark III from Verle. It didn't make any difference in Vic's 40X—that rifle will shoot anything. He ended up with 34Xs . . . Auer and Hollister, teamed up as members of the Italian Rifle Association, UITS, placed second with 799-59X.

Aggregate results were rather lively as only 2Xs separated the 1961 and 1962 National Champs. In fact, Vic had four men breathing down his neck. His winning score was 1598-129X; Kendall—1598-127X; Wright — 1598-122X; Hawdershelt — 1598-121X; and Davis—1598-116X. Hollister, Jordan, and Augie Westergaard came through with 1595's.

Vic fired the reconditioned 52-C, with which he won the Nationals, in laminated stock with Swem bedder, Unertl scope, and the last of lot 26A, EZXS. He observes that "many people run into gun trouble in high humidity, which causes a change in barrel vibrations." Vic carefully set the Swem bedder on his 40X before Pres shot it. Perhaps Pres has been converted now into the bedder fraternity.

NRA CONVENTION HIGHLIGHTS ***

Attendance records were smashed by countless thousands at the 93rd NRA Annual Meetings in Los Angeles, April 4-8. With California's NRA membership numbering 89,000 strong, the long lines of people waiting to get into the Exhibit Hall never seemed to thin out . . . The Coca-Cola Company dispensed more cokes (complimentary) than at any convention ever held in Los Angeles . . . Dan Carroll, of Remington, was impressed by the enthusiasm of the Exhibit Hall visitors. He called it "heartwarming," in contrast to Washington where everything is "so cut and dried."

On Saturday afternoon, April 4th, we attended the AMERICAN RIFLEMAN forum, to hear from editor Walter Howe the method used for putting the magazine togethre . . . That night, at the NRA Members Meeting, we heard annual reports of the activities of the association and saw color film of the NRA float in the Rose Parade. It was announced that the slate of directors recommended by the nominating committee has been elected, which was to be expected. It is hoped that they are good men. Some whom we know personally are excellent representatives of the shooters. It seems a propitious time to mention that much of the Life membership would prefer to elect directors from its own respective area. Unless a Life member from Nevada is personally acquainted with a nominee from Wisconsin, he is not qualified to judge that nominee's qualifications. Members of the nominating committee can be influenced by the fact that a man is or is not a good politician, for in many instances they can only base their selection on cold statistics from a sheet of paper. The Life Members who have had the opportunity to observe a prospective director can best determine whether or not he will represent their diverse interests to their satisfaction. For example, California has 12 directors, yet smallbore shooters feel that they are treated as "stepchildren." Entitled to two directors representing smallbore, they have none. Were it not for the fact that NRA Vice President Harlon Carter is receptive to matters which concern the smallbore game in Calif., this group of shooters would be an even more disgruntled lot.

On Sunday we went to the "Get Acquainted Luncheon" in the Coconut Grove of the Ambassador Hotel. It was a gala occasion with festive music, expertly emceed by Harlon Carter, with an exhibition of quick draw by a man who was a polio victim and has abandoned his wheel chair. The spirit of the occasion was dimmed by the fact that one elderly gentleman was dining alone, wtih no opportunity to "get acquainted."

We had looked forward with anticipation to the **Shooters Session** on Monday morning. I regret that there was no opportunity to present the issues which many of you requested that I introduce in behalf of the shooting game. The program was filled to capacity and the limited time devoted to "questions" was devoured by some who were too lazy to write letters to THE RIFLEMAN technical staff for that type of information afforded by the Dope Bag. Besides, we had no questions, merely suggestions. Since the session was so pressed for time, perhaps we can better present your problems in print than we could have done vocally. The report by the Chairman of the Smallbore Committee was largely confined to the junior program, which we consider important, but the prone phase of smallbore was relegated to obscurity.

Franklin Orth, Executive Vice President of NRA, gave an excellent report on our Int'l shooting program. Perhaps the news from the convention which is of greatest interest to all of us concerns the **1966 World Championships.** Replying to Don's question from the floor, Mr. Orth revealed the snafu which threatened to kill plans for a national International range and place the U. S. in a most embarrassing position. Having already extended an invitation to the nations of the world to compete in a World Championship in this country in 1966, which invitation had been accepted, approval to construct an Int'l ronge had been obtained from the secretaries and under-secretaries of the various services. Then—President Johnson launched his economy program, and Secretary of Defense McNamara decreed "**no** International range"! Sen. Hayden of Arizona was "shocked" at McNamara's action. Sen. Hickenlooper, Sen. Humphries, Gen. Maxwell Taylor, and others, rallied to the defense of our prestige at home and abroad. As a result, a joint resolution by the Congress reversed the Defense Secretary's action and appropriated a sum of $6,000,000 for the purpose of building an Int'l range for the World Championships. These championships were last held in the U. S. in 1923. It is high time that we kept some of our tax dollars at home in lieu of distributing them promiscuously to the four corners of the globe, even penetrating the Iron Curtain . . . We are unable at this time to pinpoint the exact location for the construction of our new National Int'l range. The rumor is that it will be at the Marine Base at Quantico, a short drive from Washington. Regardless of its location, it will provide an impetus to U. S. shooting, particularly the Int'l phase, and perhaps enable more civilians to try out for the 1966 World Championship competition.

While the Olympic Committee is attempting to clarify the status of "an amateur," such a ruling will obviously come too late to permit the U. S. and other honorable nations to compete in the 1964 Olympics under the same conditions as do the athletes from the USSR. One of our greatest basketball amateurs has been disqualified from Olympic competition because some "busybody" reported that when he was 17-years-old, he accepted the sum of $5 for playing in a sandlot game! . . . It is generally known that Russia's adherence to Olympic rules consists of flagrant violations; however, disciplinary measures can hardly be taken without irrefutable proof, as long as the USSR competitors and their Olympic officials state under oath that they are amateurs.

63,000,000 participated last year in Russia's physical fitness porgram. Realizing that the **power of concentration** in shooting is the all-important factor, Russia did not neglect the mind in training her champions. That country has 2000 ranges. A mammoth Sports Fiesta, providing Olympic-style competition, is an annual event. The top 100 from each sport enjoy wide acclaim and receive the decoration of the Soviet Union . . . Athletics for them is a serious business—not the leisurely sports which we enjoy.

Former NRA President Irvine Porter served as chairman for the Shooter's Session. Possessing one of the most brilliant legal minds in NRA, Irvine's sense of humor maintained an element of balance in respect to the more weighty topics.

NRA's extremely important new **Home Firearms Safety** program was outlined by Exec. Committee member Raymond Sargent. We all know that each needless firearms "accident" merely provokes further pleas for unrealistic legislation. We've talked and written letters—but, now we have an opportunity to take positive action to educate the non-shooter who happens to own a gun, and to ultimately reduce careless handling of firearms which poses a constant threat to our right to bear arms. The Home Firearms Safety Committee is seeking qualified volunteers to conduct courses and to speak before civic groups. I cannot urge you too strongly to cooperate in this valuable program. The time you devote is insurance against firearms registration and its dire consequences!

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Interesting sidelights—

New England now has an NRA Field Representative—**Colonel John Lee.**

A 250-point, 50-ft., **Junior Safety Range** will be constructed nera the heliport at Perry. Budget approval has been granted.

Two new NRA Direcotrs have been named to fill vacancies, which occurred after ballots were mailed to Life Members. They are former **Governor George Craig,** of Indiana, a member of the Home Firearms Safety Committee, and **Colonel Merle Preble,** Director of Civilian Marksmanship and Executive Officer of the National Board for the Promotion of Rifle Practice.

New York State—Woodson Scott, new member of NRA Exec. Committee, reported passage of favorable amendments to existing firearms laws. Effective July 1, 1964, licensed shooters may carry firearms in the trunks of their cars through New York City. On the same date, possession of toy pistols will no longer be illegal. A third amendment prevents confiscation of firearms upon the death of a licensee, and extends the period 120 days in favor of the estate.

Alice Bull is the first lady in the 93 year history of the NRA to be elected to the Executive Committee!

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Corridor Chatter:

Clyde Hart deploring the effects of inferior bedding on his fine barrels, declared: "You are better off with a good bedding job and a mediocre barrel than with a prime barrel and poor bedding!" Mrs. Hart confided that Clyde has not always embraced this viewpoint.

Dr. Al Garcelon, of Maine, a new member of the NRA Executive Committee, unable to conceal his surprise upon meeting me (he wasn't prepared for my femininity, I imagine), observed that Random Shots does not drawl as I do. Thanks for the plaudit, Al!

At the Remington Open House—TV's "**Lawman**", John Russell, NRA Life Member, displaying a rare faculty for remembering the name of each person in the room. With him was his cousin, **Colonel Peter Agnell,** popular 1963 Pan-Am Team Captain, who last summer wrote to compliment us "for a most comprehensive, colorful and

(Continued on Page Fourteen)

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Individual annual dues $5.00 (includes magazine subscription for membership term). Associate member (wife or husband, son or daughter under 18 years of age, of member in good standing—no magazine) $2.50. Life membership, $75.00. Annual club affiliation fee $10.00.

PRESIDENT'S CORNER

Not all of us in this organization see eye to eye on different classes, rules, methods, and etc. You will notice in some of my past issues of the President's Corner I have suggested for each member to publish his or her dislikes or comments of different subjects. I thought this would bring forward some very interesting and educational features and ideas that each of the members could thereby better themselves. Some of the information was quite revealing and educational; but along with several letters came a great deal of plain "throat cutting" and "dog-eat-dog" style of writing. Several publications were submitted to me by the Editor, Mr. Teachout, for permission to be put in the N. B. R. S. A. section of P. S. Several of these I passed and several I was in question about. Several were published in other sections of the magazine that I would have refused. The results of several statements made by writers have caused considerable damage to friendship among old time shooters. This kind of writing, to fill space in Precision Shooting, is no good to anyone. In return it has caused me a great amount of unnecessary letter writing, trying to cool off each hot head. I feel that if the N. B. R. S. A. would offer me just one class to shoot in that I was interested in I should not condemn another class that I had no interest in whatsoever. This very thing is happening in the N. B. R. S. A. in regards to extra heavy rifles, different calibers, rifle butt stocks, rules, methods, classes and etc. Again, I ask of you, when you write, write for the good of the organization and not for just your own benefit.

Mr. Sam Wilson's issue in this month's P. S. has some very sound merits about it. I am putting a great amount of work on a document on the Aims and Objectives (with the help of many) of the N. B. R. S. A. The official rule book is the only thing we have at the present. Before my office expires, I hope to have all this information and data brought up to date.

In the June issue of P. S. I hope to put in print most of the suggestions put before me for each member to express an answer by a simple yes or no. I ask each N. B. R. S. A. member to respond so we may know your feeling.

As I close this month's issue of the President's Corner again, I ask of you to make a strong and growing organization, we must all be a person who can take loss or defeat without complaint; or victory without gloating; and to treat our opponents with fairness, generosity, courtesy and a good word. This, we admit, must be called "A TRUE SPORTSMAN."

Most Sincerely,
A. W. Walter
President, N. B. R. S. A.

A LETTER

Cashmere, Wash., April 22, 1964

Editor, Precision Shooting:

Since returning from the Nationals at Nescopek it seems to me there has appeared in PA an unusual amount of bitter comment regarding mechanical rests, rifles without buttstocks, extra heavy rifles, etc. Some of these contributors appear to be quite hostile and as a user of some of the equipment complained about I rather hesitate to go to Tulsa next September. It wouldn't look right for a Westerner to go east to get scalped.

The comment I refer to is not the almost monthly sniping done by our friend, Stuhlschuter, in his column. While he never passes up a chance to take a poke at such equipment he is never bitter. Persistent is a much better word. I have in mind particularly the letter from Chas. Kingsley in the November issue and Harvey Donaldson's letter as quoted in the Stuhlschuter column for January.

For some time I have been wanting to get a few words in but thought first, in order to be sure of my ground, I should obtain a copy of the constitution and by-laws of the NBRSA and find out just what are the declared objectives of the organization. I had been thinking all along it was dedicated to the development of extreme accuracy in rifles, in ammunition and in shooting techniques which would best bring out that accuracy.

So I wrote our club secretary, thinking that surely we wouldn't organize a club and affiliate with the NBRSA without having in black and white just what it stood for. The secretary had no information on the subject and referred my inquiry to Ray Speer, our young and energetic Northwest Director. Ray writes, "Sam, to the best of my knowledge, the only document which states the aims and objectives of the NBRSA is the official rule book."

The rule book should hardly be the last word on the subject so I wrote our secretary, Bernice McMullen. She writes, "I am in the same position as you. I can find nothing in black and white or document form stating the declared purposes of the NBRSA. The printed sheet I am enclosing is the only thing I have come up with. This, of course, is only what is printed on page one of the rule book." It seems to me if we don't have a declared purpose it is high time we got one. Otherwise, how are we ever to agree on anything?

1964 BENCH REST MATCHES

GULF COAST REGION

Abilene, Texas: June 27, Sporter class, June 28, Light Varmint class. Varmint and Sporter Class National Championships, Aug. 7th, 8th and 9th. Programs and information from J. L. Bonner, Box 606, Cross Plains, Texas.

EASTERN REGION

Easton, Ohio: July 25 and 26: Unrestricted, Eastern Region Championship; Chippewa Rifle Club, Nelson Berger, Sec'y, R. D. 1, Box 192, Marshallville, Ohio.

Fassett, Pa.: (All for Varmint and Sporter classes; June 13 and 14; Eastern Region Championship; July 12; Aug. 30; Sept. 12 and 13; Pa. State Championship; South Creek Rod & Gun Club, Gerald Arnold, Sec'y, R. D. #2, Gillett, Pa.

Wapwallopen, Pa.: (All Unrestricted and Heavy Varmint) Aug. 15 and 16; Council Cup Rifle Range, c/o Robert W. Hart, 332 Montgomery St., Nescopeck, Pa.

Augusta, Ohio: June 6, (unrestricted—nite), July 4-5 (Unrestricted & H. Varmint), Oct. 17-18 (Unrestricted & H. Varmint, Ohio State Championship). Reed's Run Rifle Range, Box 66, Augusta, Ohio.

Southboro, Mass.: (All Unrestricted) June 7; Aug. 2; Oct. 11; Southboro Rod & Gun Club, Inc., c/o J. W. Baldwin, P. O. Box 402, Westboro, Mass.

Canton, Ohio: June 20, July 18, Aug. 22; (All Sat. matches, afternoon and night, Varmint class, all at 200 yards). Canton-McKinley Rifle Club, c/o R. H. Hohnson, Sec'y, 3118 11th Street S. W., Canton, Ohio.

Johnstown, New York: Sept. 5 and 6; (Unrestricted, Heavy and Light Varmint, Sporter classes) Pine Tree Rifle Club, Inc., c/o Edward J. Sweeney, 501 North Market St., Johnstown, New York.

MISSISSIPPI VALLEY REGION

St. Louis, Missouri: July 18 and 19 (Unrestricted, Heavy and Light Varmint, Sporter—Regional Championship); Aug. 29 (Heavy Varmint—twilight); Oct. 3 (Sporter—twilight); Bench Rest Rifle Club of St. Louis, c/o Arthur J. Freund, 1038 Hornsby Ave., St. Louis, Mo. 63147.

MID-CONTINENT REGION

Hot Springs, Arkansas: June 27 (Var & Spt); Aug. 22 (Var & Spt); Sept. 5 (all classes). Hot Springs Gun Club, B. J. Maddox, Sec'y, 110 Pinewood, Hot Springs,, Arkansas.

Kansas City, Kansas: June 6 (night—unrestricted); Aug. 1 (night—Unrestricted—Reg. Champ); Aug. 29 (night—H. Var.—Reg. Champ.); Sept. 26 (night—H. Var.—non. reg.); Oct. 17 (night—unrestricted). Mill Creek Rifle Club, L. F. Carden, Sec'y, 5022 Waverly, Kansas City, Kansas.

Tulsa, Oklahoma: June 20 (night—Bench & H. Var.): July 18 (night—Bench & H. Var.); Sept. 16-17-18-19 (Unrestricted National Championship). Tulsa Bench Rest Rifle Club, R. G. Berry, Sec'y, Pawnee, Oklahoma.

Wichita, Kansas: July 4-5 (day and night—all classes—State Champ.); Oct. 3 (night—unrestricted). Wichita Bench Rest Rifle Club, c/o Maj. Richard Hornbeck, Pres., 1640 Windsor, Wichita, Kansas 67218.

NORTH CENTRAL REGION

Buffalo, Wyoming: July 11th and 12th, Mid-Summer Matches; Aug. 30th, Sporter match; Sept. 27th, Hunters match. Buffalo Outdoor Rifle Club, C. C. Hankins, Sec'y, P. O. Box 151, Buffalo, Wyoming.

Iowa Falls, Iowa: June 27 (Var—nite), June 28 (Spt—day); July 25 (Spt—nite), July 26 (Var—day); Sept. 19 (Var—nite), Sept. 20 (Spt—day). Iowa Falls Gun Club, Lee R. Boddy, Sec'y, Iowa Falls, Iowa.

NORTHWEST REGION

Seattle, Washington: June 13-14, (reg.) four classes; Aug. 15 and 16, Northwest Championships, four classes. Nov. 22, Turkey Shoot. Puget Sound Benchrest Rifle Club, M .M. Oakley, Sec'y, 7230 So. 116th, Seattle, Wash. 98178.

Lewiston, Idaho: July 3 and 4; Heavy and Light Varmint—days—Unrestricted Open and Limited—nights). Programs from Raymond G. Speer, P. O. Box 244, Lewiston, Idaho.

SOUTHWEST REGION

Yreka, California: Sept. 5 and 6, Third Annual West Coast Championship, four classes (reg.) Yreka Rifle Club, Ray E. Jones, 508 Knapp St., Yreka, California.

Richmond, California: July 25 and 26, California State Championships, Richmond Rod and Gun Club, Inc., 3155 Goodrick Ave., Richmond, Calif. 94804.

Mr. Kingsley, in the November issue, expresses great concern over the development of these mechanical rests and says, "At present these rests must be in two parts, a front rest and a rear rest, but pressure is mounting to permit a single rest unit to be used. Not to mince words, this will be a machine rest."

Now, let's read something: "Ordinary

shooting by the best marksmanship methods, even prone shooting, will not give a clear indication of the capabilities and possibilities of a rifle. There is too much of the human element involved. Nor will the machine rest give the answer, for no rifle assembled in its stock will shoot as accurately from a machine rest as it will when fired in the manner to be described herein. No matter what results a shooter may get by ordinary marksmanship methods, he will always have the thought that if his materiel was basically more accurate he would get better results. But to improve any rifle and its ammunition we must have positive proof of its performance in all stages of its development so that we may judge whether the measures we take towards its improvement give positive or negative results."

Who wrote that? Pick up your copy of the 1951 Bench Rest Shooter's Annual, The Ultimate In Rifle Precision and turn to page 4. Editor of the book? Townsend Whelen.

Let us look at the last paragraph of Mr. Kingsley's letter which states, "But before we take action of any sort, let us consider whether it fits in with the objects set forth by Townsend Whelen in the 1950 Year Book. Will it promote rifle accuracy and the sport of bench rest shooting. Don't overlook the word 'sport.' It may be the key to our difficulties."

How does this sound? "Let us now turn from the experimental and development features of this subject to the Matter of Competitive Bench Rest Shooting. Bench rest matches are hardly competitions in personal marksmanship because the human element in shooting is largely eliminated. They rather test how the shooter can best select a superbly accurate rifle, or have it made, or make it himself. How well he can adjust, tune it up,, and handle it, and how well he can prepare his ammunition to give the maximum performance. In other words, it is a competition in the technical knowledge, skill and manual dexterity, and in the ingenuity of the rifleman. The development of such skill, and its demonstration in bench rest shooting has proved to be far more interesting, and a more lasting and satisfying hobby, than the mere demonstration of skill in conventional marksmanship. It is rather a competition in brains and skill than in muscular and nervous coordination."

Who could have written that? Just turn to page 5 of the same book. Editor, Townsend Whelen.

Harve almost blew a gasket over those fellows who use "one certain rifle in a match to offset weather conditions." I presume he means changing from a .22 to a .30 when the wind gets rough. I think the idea is an excellent one and should be encouraged if by this change we can LEARN something. I am guessing these fellows who think it is unfair to switch to a .30 believe the heavy caliber will blow around little, if any. Let me say they will blow around PLENTY. On top of that, they won't, so far, group as well as a .22 and I am not convinced there is any advantage in the change. But let's find out, for heaven's sake. Maybe if, like in baseball, we yank the .22 and give the .30 a chance to pitch when the going gets rough we can improve the .30 far beyond where it is now, which would help all shooters. Surely we are seeing some .30 groups now that would have been considered fantastic a few years ago. But the .30 seems to lack consistency. A hot group occasionally but never a series of hot groups. If we keep trying we should lick that and then we will have something good, off the bench range and on it.

Will the .30 blow around? As a practical example I might mention a 200-yard, 10-shotter I fired a few years ago in a match at Yreka, Calif. Caliber, 308 Win. with 44½ of 4320 behind the 168-gr. Sierra International. Wind from 3:00, strong but fairly steady. Cranked on plenty of right windage and my group, just under 1", was 2½" to the left and uncomfortably close to the foul line. With the scope set at zero windage the group would have been clear off the paper. This with a boat-tailed bullet and plenty of push behind it.

When I compete at Johnstown, Tulsa or Nescopek nobody reminds me that I am at a chuck shoot. Rather, I have felt that I am going up against the very best in rifles, ammunition and shooting methods that American ingenuity have been able to devise. We should learn by whatever means or method what is required to get the greatest accuracy from a shooting iron. Then we should apply the things we have learned to conventional arms as far as possible. The heavy rifle is the laboratory. Other rifles benefit by what is discovered and proved in the lab. You can PROVE things with the heavy rifle that you can only surmise or guess at with the sporters. The things you learn about barrels, bullets, loads, cleaning methods, loading tools ,etc. are all applicable to the light rifles.

Of course, as Harve suggests, we might go back to the light rifles and sand bags. We might also go back to black powder and, better yet, flintlocks. And we might make everybody shoot offhand. That is, if we don't want to learn anything.

Of the five National Championships I have won with rifle and pistol since 1919 only in connection with the last two was I allowed to support the firearm with anything but my own anatomy. Now I prefer a type of shooting from which I can prove some of the things I only guessed at in the years since my competitive shooting career began in 1915. There are many more things to be learned and if we keep digging we'll uncover them.

L. E. (Sam) Wilson

CORRECTING AN UNINTENTIONAL ERROR

Dear Phil:

No doubt many bench rest shooters have been reading the Sierra ad in several sport magazines concerning a ten shot group at 200 yards shot by me at the Nationals last year.

In regards to this ad, it should read the smallest **.30 cal.** ten shot group at 200 yards. When I sent the target in to Sierra I should have written it up like this but erred when I omitted the words "30 caliber" from that one statement, and I take the full blame for this. However, I fully intended, in my letter to Sierra, that I was referring to a .30 cal. group throughout my statements.

To inform shooters who do not know, the ten shot record at 200 yards, with any caliber, is held by Dave Walker of Louisville, Ky., and was shot in a registered match at Richmond, Ind. I definitely would not want this credit when he reserves this right by shooting the smallest ten shot gorup at 200 yards.

My reason for sending this .30 cal. group in to Sierra was to let other shooters know what good groups can be fired with factory bullets. I believe this could encourage new shooters in to our game. There are aggregates being won around the country now by shooting factory bullets.

Yours truly,
Ferris Pindell
Richmond, Indiana

Bench Rest Match Reports

WICHITA, KANSAS

The first registered match of the year at Wichita had a good turnout with 11 Heavy Varmint shooters and 8 Unrestricted shooters. Shooters from Mo., Kansas, Okla. and Ark. were on hand. After raining all day, the weather was cool but with a rainless overcast. The match started at 5:00 PM with winds of 10 to 15 MPH which were a tail-quartering wind, and kept everyone on their toes.

Heavy Varmint:

Allan Hall, a newcomer in the bench shooting game, set the pace for the varmint shooters and placed 1st at 100 yards with .4614" agg. Small group honors went to Marshall Johnson at 100 yards with a .279". At 200 yards Marshall took over and placed 1st at 200, took small group at 200 yards with a .445" and 1st grand agg. Final results were:

	100	200	Grand
Marshall Johnson	.4946(3)	.4404(1)	.4175
Larry Beard	.4624(2)	.4174(2)	.4399
Allan Hall	.4614(1)	.4220(3)	.4417
Tommy Wiggins	.5498(4)	.5734(5)	.5616
James Malir	.5948(5)	.5722(4)	.5835

Johnson was shooting a .222, S&L action with a Hart barrel, 20X Unertl, Gunsmithing and stocked by Wichita Precision Tool, with 23.7 grains of Ball C and 53 Grain Sierra HP bullets and Remington Primer.

Unrestricted:

All shooters had good groups at 100 yards, with Rick Hornbeck taking first at 100 with .3680 and tieing for small group with Bill Taylor with a .263". At 200 yards, Bob Stultz took off like a bomb with a new rig he built up this past winter, taking 1st at 200, small group with a .571" and 1st grand Agg. Final winners were:

	100	200	Grand
Bob Stultz	.4164(3)	.3888(1)	.4026
Rick Hornbeck	.3680(1)	.4454(2)	.4067
"Bud" Carden	.4126(2)	.4547(4)	.4336
Horace Powers	.4688(5)	.4509(3)	.4598
Bill Taylor	.4342(4)	.5073(5)	.4707

Bob Stultz's outfit is a .222 on a FN action and Hart barrel, 32X Unertl, Gunsmithing by W. Smith and stock by himself, 25 grains of H-335, 55 grain Baldwin bullets and RWS primer.

CANTON, OHIO

At the Canton-McKinley Rifle Club's non-registered bench rest match on May 2nd and 3rd, sixteen shot the five 5-shot match for score aggregate at 200 yards, with Varmint class rifles.

Lawrence Rucker from Akron won the last three matches with scores of 50-5x, 50-4x and 50-4x and the aggregate with 249-18x. Rucker shot a .308 cal. rifle on Springfield action. James Anderson, Canton, didn't win a fired match but was runner-up in the aggregate with 249-16x. Paul Gottschall from Salem, Ohio, won the second fired match with a 50-3x score and was third in the aggregate with 249-14x.

Harvey LaChat, Canton, won the first match, the first he ever fired in Varmint competition, with a 50-2x score.

Runner-up Anderson shot a new Hart barreled Remington rifle. Fourth ranking Waltz (246-14x) shot a home-made action barreled for the 222½ cartridge. Fifth ranking Espenschied (246-10x) shot a new Shilen rifle.

All the matches at Canton are fired at 200 yard range—they claim they just throw rocks at 100 yards.

LEWISTON, IDAHO

Seventeen shooters were registered for the First Annual Spring Bench Rest Matches at the Lewiston Pistol Club Range, May 2nd and 3rd. Ten shooters competed in the Unrestricted Rifle matches, nine in Heavy Varmint Class and seven in the hunting rifle category. The 200 yard matches were fired Saturday night under lights, the first time there has been night shooting on the Lewiston range, and the 100 yard matches were shot in daylight on Sunday. The match sponsors feel that the light turn-out for the hunting rifle matches was due principally to inadequate prior notice to area shooters.

The Hunting Rifle class shot five 3-shot matches at 100 yards on NBRSA official 200 yard Sporter targets. L. E. Wilson, Cashmere, Wash., shooting a .308 Spl. in Day barrel on Win. M-70 action and his own hand-made bullets, won the 5 match

(Continued on Page Twelve)

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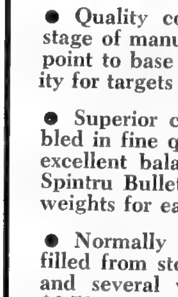

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Bench Rest Match Reports

(Continued from Page Eleven)

aggregate with a .713" average. Dave Andrews, Lewiston, shooting a .308 Win. in M-70 rifle with Speer 165 gr. bullets, was 2nd with a 1.226" ave. Forrest Luthy, Lewiston, shooting a .270 Win. in Hi Std barrel on FN action and Speer 100 gr. bullets, was 3rd with 1.754" ave.

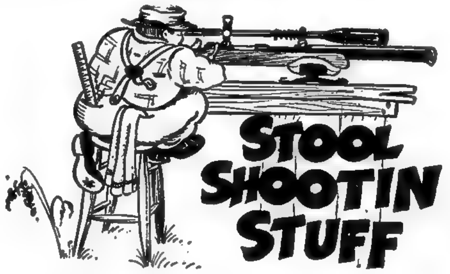
The high ranking shooters in Unrestricted Class were:

	200	100	Grand
Manley Oakley	.4380(1)	.445(3)	.4415
Roy Norman	.4847(2)	.435(2)	.4598
Raymond Speer	.5511	.399(1)	.4750
Allen Bench	.5001(3)		

The high ranking shooters in Heavy Varmint class were:

Ed Frombach	.448(1)	.513(3)	.481
Manley Oakley	.493(3)	.505(1)	.499
Roy Norman	.503	.512(2)	.508
Wayne Davidson	.477(2)		

Several new range records were established; with unrestricted rifle, Oakley's 200 yard agg. of .438 and grand agg. of .441, and Ray Speer's 100 yard agg. of .339. Ed Frombach's 200 yard group at 200 yards of .285" adn .229" group at 100 yards, both in Varmint Rifle class.



Dear Phil:

It was good to get your letter today and indeed we have been having some beautiful shooting weather. The heck of it is, though, that I can't seem to find time to shoot. There are so many different projects that I can't keep up with all of them and Mother Nature pours on the bright warm sunshine during the day, with cool dew laden nights that makes the grass grow faster than I can cut it. The chap who did the landscaping when I was building the place more than twenty years ago said that I was calling for a lot of grass area but at that time I could find the labor to cut it and the money to pay them. Now I can't find the labor, and if I could, I'm not so sure I could afford to pay for it. The other day, a friend of Merrie's told her of paying $15 for a workman to use his power mower for an hour and a half. I thought that was a pretty steep price and I'm going to let my lawns go back into wooded areas before I get involved in any such a racket as paying that much for grass cutting and a little flower bed trimming.

Several years ago the State reclaimed one of the lakes adjacent to my house and stocked it with rainbow and brown trout. They took hold pretty well and the boys that have time for fishing are landing them frequently from three to five pounds. The best I have been able to do is get a couple of boats painted and caulked. This seems to be pretty much par for the course for my age group as I hear it from dozens of other retired folks and I know the great majority of them aren't nearly as active as I am. Thence comes the saying, I guess, Phil, that I hear around here frequently to the effect that a retired person is one who gets up in the morning with nothing to do and goes to bed at night with it half done. But all benchrest shooters are excepted from that category. We don't have to look around far amongst our shooters before we find that almost without exception, they are so deeply interested in the game that hours and hours of love and labor goes into the simplest kind of a problem. Actually I think the refinements of every little detail are essential to both the pleasure and success of the game. I have seen these efforts keep a good many of our shooters young and the pennies that they spend mount into dollars but those dollars keep a fellow happy and well and are certainly a good investment. It is just getting too costly to be sick. Only today we were informed that rates at the local hospital go as high as $60 per day.

What did you think of the can of E Z - SIZE that Mr. Hunter sent to you and me? I thought it was a pretty interesting product. He seems to be pushing it pretty much as a full length sizing lubricant and its quick drying feature certainly makes it pleasant to handle. It seemed very attractive to me, especially because I am ever on the search for a lubricant that will work better for bullet making. The long longitudinal creases that we usually end up with on the ogives of our home made bullets are greatly accented by too much lubricant. Unfortunately, we dare not leave this lubricant out of our bullet making operation because of the excessive wear that it causes on our expensive bullet dies. Of course, expensive tungsten carbide dies resist this wear much better than those of hardened and polished steel but if a lubricant such as E Z - SIZE which is produced by Mr. Henry Hunter of 334 Bedford Road, Pleasantville, New York will cut down on the wear on the steel dies, it is well worth the $1.98 a can. It should save a lot of elbow grease, too.

Ever since reading about service tests of plastic jacketed bullets, I have become intrigued by the advantages that would be gained in the benchrest game if we could introduce some of those features. My interest goes back a matter of two or three years ago when a friend of mine who lives but several miles from me told me of some of the characteristics of Teflon.

This fellow is a fabulous character in his own right because, through his own initiative, in less than one generation parlayed an investment of less than $300 in a backshed plastic operation to a multi-million dollar individually owned business which he sold about two years ago for a little under twenty million, and still retained working contact with the new corporation. It was he who supplied me with the Teflon material for my first front rest and he told me about Teflon lined cooking utensils long before they appeared on the market.

It is reported that Teflon surfaced projectiles gave an amazing increase in velocity in the service tests. The Teflon apparently left a deposit on the rifle bores that stood up so well that subsequent firing of normal copper jacketed bullets still showed a substantially increased velocity on the chronograph tests. My objective is to find a method of coating our present bullets with their superb built in accuracy, with a substance that will result in higher velocities and greater protection to the barrels. Perhaps E Z-SIZE is a step toward this direction, but at any rate, I am sure that the goal is one to be desired.

Wouldn't it be wonderful if we could achieve a breakthrough that would make possible the long barrel life that now is possible with lead bullets and non-corrosive primers for cartridges of lead bullet velocities.

These added features will still require bullets of exact dimension and perfect balance in order for us to continue to make consistently small groups but we are now plagued by even those very minor variations that occur in jacket wall thickness. We are playing with every idea that we can think of to eliminate these variances. For nearly ten years now, I have been maintaining that selecting jackets was worth while but that's not enough to get us to the point we want to reach. The lead mixture in the core has to be right and the core has to be seated by a punch that is so exact in dimension that absolutely no lead bleeds by at the time the core is seated. It is at the core seating stage that the lubricating of the jackets is best accomplished notwithstanding the fact that lubricating the jacket at this stage reduces friction between jacket and die to the extent that occasionally the jackets with the seated cores stick to the punch instead of to the die. Too many occurrences such as this will slow down production time badly if they have to be hand stripped from the punch. I have generally found that by juggling around different size punches and the amount of pressure applied, well seated cores can be obtained.

Did you ever consider the fact that a bullet without a jacket would be every bit as good to us in the benchrest game or the accuracy game if we could get it up to the velocity that we require and shape it well enough so that the center of gravity would be far enough back to give us the stability that is characteristic of our present hollow pointed jacketed bullets?

When Creighton Audette and I were talking a few weeks ago on the subject of better bullets, he brought out the point that the government had hundreds of thousands of tons of byproduct uranium that they had not yet been able to find a use or market for. Creighton visualized the possibility of converting it to rod form and with high speed, specially precise automatic equipment, turning bullets of this homogenous material to the size and shape desired. Since the material itself is heavier than lead, some savings in bullet length for the same diameter would be achieved.

This entire process would not be inexpensive enough to make bullets to be used as plinkers or just ordinary target shooting but we may be approaching the day when more money spent on the projectile would pay sufficiently big dividends to make the expense worth while. Bear in mind the fact that Sam Wilson, when he did his great shooting at last year's Nationals, valued his bullets so highly that he did not feel he could afford to use them often on sighter shots. More and more of the boys are paying attention to the quality of their bullets.

My dream of such a bullet would be such a material as uranium possibly because of its greater weight, ground up in combination with Teflon and if possible, swaged in our present type dies and cast in suitable molds. I don't know how easy it will be to achieve dimensional variations of less than one thousandths of an inch but somehow or some day, we will get over some of these hurdles and the jacketed bullet for target work will be obsolete.

Incidentally, the jacketed bullet provides us with one dividend that many of us lose sight of. If it is made properly, the slightly rounded heel can make the difference between an accurate bullet and one which is not. There is no doubt in my mind that too sharp a heel adversely effects accuracy because of the fins which are wiped back by the lands as the bullet progresses down the barrel. Conversely, a bullet which is rounded too much is likely not to be uniform and thus when it leaves the muzzle, escaping gas on one side of the base will tend to push that base in the opposite direction. This condition can also exist with boattail bullets. I have always had a feeling that boattail bullets had to more perfectly match the barrel than any other type and that the most minute variances in the bevel and its concentricity showed up adversely in the bullet's performance.

All of the above theorizing may be of moderate interest or much interest to many of us but, alas, we must come down to earth and at the present time obtain the best jacket possible. Jackets vary considerably from lot to lot and thus when I find a good lot, I buy them in big quantities. As I write this column, I have just finished checking the most perfect jackets that I have ever seen come from the Sierra factory. I got the sample lot through a recent order from Aurand's and as soon as I checked them, I immediately ordered twelve thousand of them. I would have taken a hundred thousand of them had such quantities been available and were I not of the opinion that to deplete his stock completely would not be the way the benchrest game is played by the majority in it.

I have seen the years when I thought even a quarter spent on the Rule Books of the NBRSA was a poor investment but I think every shooter should avail himself of the newest edition and recognize how much appreciation should go to the Rules Committee. I think few shooters realize how many hundreds of hours went into re-writing these rules to the present form. They won't please everybody but the minute you read them, you will quickly recognize that some very major steps in the right direction have been taken. These rules, of course, will not stay static and that is as it should be but until they are changed, every club and every competitor and every referee should stick by them. I know that our elected representatives are constantly getting gripes of one kind or another about the rules and sometimes those who complain are willing to make some constructive suggestions or improvements. Unfortunately, too frequently the suggested improvement would only benefit a few and not be to the advantage or acceptable to the country-wide shooting groups.

You will quickly notice that paragraph #13 on Rests has been greatly improved. The sandbag has at least been defined a little bit more accurately although I don't really see any reason why birdshot should have been eliminated as a packing substance. "Easily flexed" or "easily deformable by pressure of the fingers" may depend upon to some extent what some referee considers easy but on the whole, I think the rule is very workable. I'll be interested to see whether or not Rule #15 disqualifies the use of the rabbit ear type bags. These bags are strictly designed as a guiding means for either the fore end or the butt of the rifles. They probably do not guide the rifle well enough so that it does not have to be re-aimed.

Under definitions of rifle types, I was a little disappointed to see that 23 caliber was permitted as a Sporter rifle. This is quite probably due to the fact that some of the western states have outlawed 22 bores as hunting rifles but do permit the so-called 23 caliber. It seems to me that here we are letting down the bars at a point where we should be raising them. I have always felt that the 6 X 47 was not a true Sporter type. I now have one and do not deny that it is a very accurate rifle and cartridge but I think we concentrate too much of our classifications already in the vicinity of the 22 caliber bore.

I was sort of surprised to see the paragraph outlawing electricity or pressure fluid as part of the firing mcehanism as I had distinctly understood that in the unrestricted rest class of matches we had now committed ourselves to allowing any safe weapon to be used. Now we are beginning to put control features on the unrestricted class again. This seems to me to be inconsistent in view of the fact that a hundred pound rifle would be considered legal in such a competition. Perhaps there is an explanation to all of this

(Continued on Page Fourteen)

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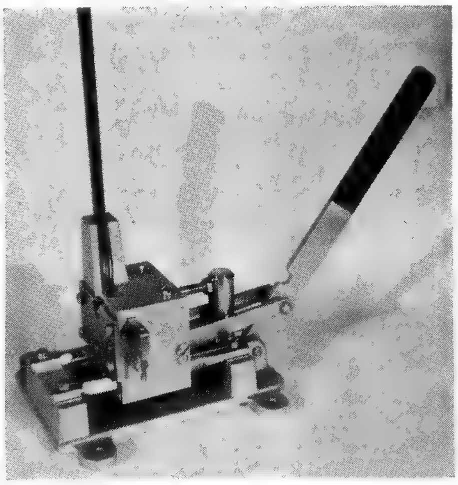

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Stool Shootin Stuff

(Continued from Page Thirteen)

and I shall be interested to hear it.

The two caliber aggregate subject as discussed in Charlie Kingsley's letter in the April issue interested me considerably and I think it must be approached with caution in spite o fthe fact that I recognize that the statistical section of host clubs are having difficulties trying to keep the mess untangled. There must be some practical way to match the statistics and still permit the choice of a caliber for the occasion. I must say that in competition the only times I varied is when I have taken out my 6 m/m to replace my .219 Don. I have made up a 7 X 57 but never felt I got enough of the bugs out of it to take it into a competitive match. In the five years that I have been trying the 6 m/m on occasions, I must say that I have found myself among those to whom Charlie refers in the difference between theory and practice. I have seen days when I thought I was helped by changing to the 6 m/m and other times when I was thoroughly convinced that I had hurt myself.

I don't see the sudden interest in whether a pocketbook is full or empty. It was never allowed to cut any ice in the game before and I must say that observations which I have made indicate this to be a weak excuse for outlawing anything in the benchrest game. I admit there is a great difference between benchrest shooting and golf and I think it could be adding greatly to the impracticability of benchrest shooting to have as many different guns as the golfer has clubs. Nevertheless, conditions vary a lot from match to match and since the only measuring stick we use is the small group, why should we drum competitors out of the game who are anxious to attain the same ultimate end product as the rest of us.

This takes me back more than ten years ago when they drummed out Howard Clark from the game because he was attempting to get small groups by firing his trigger with the pressure of a photographer's camera shutter release bulb. Many whom he was beating were quick to pass another rule that outlawed his gun which had only a pistol grip and the rank and file of the competitors thought that every gun should have a stock although even at that stage, the majority of shooters were not touching the stock with either their cheek or shoulder.

Yesterday, I received a very interesting letter from John Sweany in which he included a copy of the rules that they have been using for their "Hunter Class" benchrest matches. He says they adopted "Hunter" in place of "Sporter" because of the objections of the shooters to some of the rifles that are being called Sporter rifles. These matches are apparently meeting with a great deal of success and the rules make a good deal of sense to me. Basically, he expects the shooters to use the same type of gun that they prefer and do carry on hunting trips. Bear in mind that these rules are in the experimental stage and that they are rules for a club that has had considerable experience in running such matches. I quote here the equipment requirements as they are currently being practiced for those shoots

A. A reasonable similarity to the "over the counter guns."
B. Stocks to be of conventional design and shape. No slides or guides may be fastened to forearms or butts. Stocks not to be over 2½" in width.
C. Accurizing to be permitted as to re-barreling; triggers—no weight of pull required. MUST BE SAFE. Restocking as to accuracy and fit will be permitted.
D. All ammunition must have a case capacity equal to or greater than the 250-3000 Savage.
E. Caliber to be 6 m/m or larger.
F. Rifle must have a working magazine capable of holding 2 or more loaded rounds.
G. Rifle may have any sights. Fixed power telescope not to exceed 6x. Variables must be set not to exceed 6x.
H. Rifle and scope not to exceed 10½ lbs. in weight.

The course of fire consists of five 5-shot targets and from what information I have, they can be fired all in one sitting if desired but the maximum time shall not exceed forty minutes. Apparently a moving backer strip is not important for this type of match.

Cordially yours,
Ernest Stuhlschuter

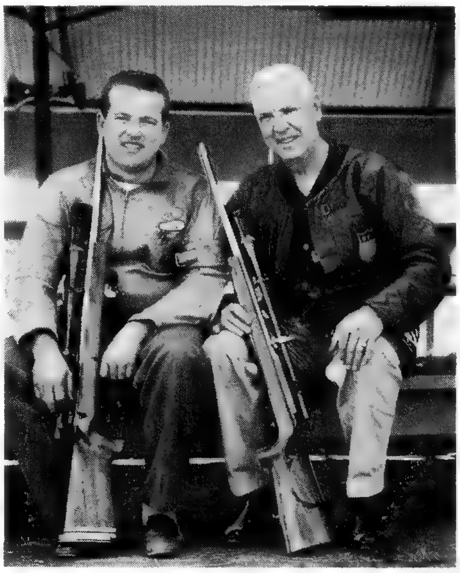
Random Shots

(Continued from Page Nine)

accurate report of the 1963 Pan American Games shooting events."

***

The **Firearms Legislative Session** was televised by CBS to be shown on "Report to the Nation" in June. Watch for the announcement, for it is of vital interest to all of you. The address by NRA President, Judge Bartlett Rummel, was of utmost importance, as he described the legal aspects of the subject, "To Have and Bear Arms." Judge Hilliard Comstock presided. In presenting the "1964 Outlook," NRA Secretary Frank Daniel emphasized, "Only when we falter, only when we 'leave it to Joe,' only when we fail as dedicated and knowledgeable individuals and shooting clubs to use our democratic processes, will we lose our guns."



Western Nationals and Calif. State Champion Bill Grater (left) with runner-up Herb Hollister. Photo by L. C. Davis

Pyramiding a 3X lead at the end of the second day, BILL GRATER climaxed a magnificent performance with a 10-point landslide victory on the fourth day of the combined **Western Nationals** and **California State Smallbore Prone Championships.** Grater was overdue to win a big one such as this, fired at the Los Angeles Rifle & Revolver Club April 9-12, following the 93rd NRA Annual Meetings. It was his metallic sight shooting which propelled him to the most overwhelming win in the history of the 6400-point aggregate.

Runner-up to Grater's 6386-479X was Western Wildcats Champ **Herb Hollister,** of Boulder, Colorado, scoring 6376-474X, flanked by Vic Auer's 6375-485X, Bob Boydston's 6374-441X, Henry Benson's 6374-452X, George Stidworthy's 6373-458X, and Mike Allen's 6373-421X. Completing the top ten were: Cliff Pierson—6371-439X, Bill Schlitzkus—6371-436X, and Bill Atkinson—6361-403X.

Conditions fluctuated from overcast skies to bright sunshine, with accompanying mirage, but buffeting winds posed the major problem. Famous shooters from around the country, both on the firing line and those visiting behind it—such as Sam Bond, Al Freeland, and Raymond Sargent—readily conceded that conditions on this well-known range could hardly be compared with shooting in a tunnel (thereby erasing an unfounded rumor of some years back).

Defending Calif. State Champ **Bob Boydston** lived up to his reputation as one of the nation's top iron sight shooters as he held back the eager beavers the first day. This easy-going native Oklahoman easily maneuvered himself into #1 spot in the opening Dewar with a 400-31X win over Herb Hollister's 400-27X and Archie Bell's 400-25X . . . At 100-yds., it was Grater leading with the only possible and 27. Boyston followed—399-29X, Henry Benson—399-28X, Mike Allen and Judy Saffell—399-26X . . . Boydston snapped back for the 50-yd. win—400-32X; Grater and Cliff Pierson—400-29X; George Stidworthy and Hollister—399-34X . . . Pierson took the meter by an X over Bill Schlitzkus of Springfield, Ore.—399-27X to 399-26X. Boydston was still in there—399-21X, followed by Grater's 398-30X. . . . **Metallic Agg. #1** shows Boydston leading 1598-113X over Grater's 1597-117X. Trailing were Hollister—1595-110X, Vic Auer—1592-113X, Pierson—1592-112X, and Schlitzkus—1591-100X . . . In the race for High Lady honors, Judy Saffell led Hi Expert Marilee Reich—1586-89X to 1583-95X.

As our observant friend, Lynn Roberson, of McAlester, Okla., has pointed out, few good iron sight shooters are brown-eyed. This prompted his nickname for Bob Boydston—: “that natural born, brown-eyed, iron sight shooter.” It is interesting to recall here that Boydston was the first Expert to fire on an Int'l Dewar Team—much to the chagrin of some seasoned veterans; that is, until he fired for record . . . He is strictly a BSA man.

A glance at the scores of the 50-meter iron 2-man team match is sufficient to reveal that the wind was on the rampage. The trophy went to Grater and Stidworthy for a 790-48X. Second was the team of Hollister and Benson, scoring 785-37X. The Hi Expert team of Kirk Clyman and Greg Kunz placed third with 784-38X.

Noted feminine stars Marianne Driver, Allen Park, Mich., and Inez Sargent, Sugarland, Texas, who couldn't pass up a tour of Disneyland on Thursday, arrived for Friday's scope matches. It was also a pleasure to welcome our good friend, Andy Gonda, from Morgantown, West Virginia, for the any sight shooting. (I think that Andy is among the many who would like to have the diopter legalized).

After a “bird watching” session with Bill Atkinson the night before, **Herb Hollister** was unbeatable. Now, I'll readily admit that such a topic has no direct bearing on precision-like shooting. Frequently, however, the little jokes which spread up and down the line during the moments before “Commence Firing” help immeasurably to ease tensions and relax the competitors. Such was the case with this story about the “double breasted mattress flipper.” Those who had weathered the convention were perhaps the most appreciative.

Hollister produced a 20X at short range (to acquire a 20X pewter mug), and a 19 at the 100-yd. stage for a sizzling 400-39X Dewar win. Vic Auer, in second spot with 400-37X, rolled up another National Reserve Record. Other medal-winners were Henry Benson with 400-33X and Inez Sargent—400-32X . . . Mike Allen was in the forefront at 100-yds., scoring 400-32X to down Boydston's 400-29X, Stidworthy and Gerald Marotta's 400-28's . . . Grater Creedmoored Auer's 400-37X at 50-yds., as Stidworthy, Pierson, and Inez Sargent posted 400-34X's. . . . The meter was Stidworthy's, by virtue of his 400-36X. Grater fired a 400-35X, Major Bob Findley, USA (Ret.), of El Paso, Tex., and Henry Benson, 400-34X.

For the first **Any Sight Agg.**, Hollister's 133X was the ranking 1599. Following were: Stidworthy—129X, Grater—127X, Allen—123X, and Benson—121X. Boydston—1598-128X. Inez Sargent out-X'd Marilee Reich, again Hi Expert—1597-118X to 1597-109X.

It is becoming increasingly evident that this was not a 1-man show. **Grater** had to work for his 3X lead in the **Western Nationals 3200 Agg.** With the glass, he pushed ahead of Boydston—3196-244X to 3196-241X. In close pursuit were: Hollister—3194-243X, Benson—3189-230X, Pierson—3189-228X, Auer—3188-246X, and Stidworthy—3188-233X. Judy Saffell, with 3181-199X, maintained her lead over Marilee Reich, whose 3180-204X continued at the top of the Expert Class.

The 50-yd. any sight 2-man team match (for which no record is listed) went to Grater and Boydston's 800-63X. Hollister and Benson's 799-62X was in second spot, over Bill Atkinson and Tom Guerin's 798-55X. Inez Sargent and Marianne Driver Creedmoored Joe Specht and Dick Burkhart's 798-54X.

With Boydston to reckon with, while keeping a watchful eye on Hollister and the rest of the pack, Grater tackled the second metallic sight course with all the know-how at his command . . . Vic Auer, who makes a hobby of collecting National Reserve Records, picked up another one with a 400-35X Dewar win. Grater was just 1X behind, followed by Mike Allen's 400-31X, Pierson's 400-29X, and Expert James Welsh's 400-26X. Boydston dropped 3 points and Hollister 2, on this round . . . This brings us to 100-yds. and the climax of the tournament. Without warning, the range became a tempest of mystifying air-currents. The “welcome” banner whipped and the red, white, and blue aerial decorations waved precariously. Attempting to sight in under two conditions, it was difficult to bridle even four or five stable patterns. Valuable shooting time was consumed in trying to dope the maze, and some came close to running out of time. Rocking target frames may have accounted for some wild shots. Through it all, Grater maintained his composure and cleaned the first stage. It was the most outstanding mastery of wind-doping that I have witnessed in a long while. A slight decrease in intensity in the second stage was deceptive as there was no rhyme nor reason to the switches in angle. Bill dropped 2, which gave him the match with 398-24X. This was one of those occasions when the first relay of Experts, Sharpshooters and Marksmen had a definite advantage. The turbulence flared up after they had fired—so, in the Open Class we find Expert Larry Anderson in 1st place with 398-19X, SS John Bertell—398-19X, SS Paul Jessup—398-18X, and MK Harvey Brinson—398-18X, taking the remaining Open awards. The Masters took quite a beating as two more experts and a SS outpointed the next ranking Master, Bill Schlitzkus, who came through with 396-26X . . . It was a welcome trek back to 50-yds., and Stidworthy took it with 400-31X; Grater—400-30X, Pierson—400-29X, Allen—400-18X, Auer—399-30X. . . It was rough again at 50-meters, and many who hadn't joined the “8” fraternity at 100-yds., made it in the meter. It went to Bob Findley's 398-25X over sharpshooter Cliff Honza's 398-19X. Archie Bell followed with 397-23X, then Allen's 397-22X, and Junior Tom Whitaker's 396-29X. Grater lost 4, which cost him the 320-shot Metallic Sight National Civilian Record.

This rough **Calif. State Metallic Agg.** was unquestionably Bill Grater's as his 1594-111X gave him a solid 10-point tournament lead over Boydston. Runners-up were Pierson—1590-95X, Allen—1590-84X, Auer—1588-107X, Stidworthy — 1588-95X, and High Lady Gail Cauley—1587-99X, who got through the 100-yd. with only 4 down.

Metallic Sight Championship honors went to **Grater** for his 3191-228X. Again Pierson trailed with 3182-207X, followed by Boydston—3182-204X, Auer—3180-220X, Hollister—3180-206X, Benson—3177-205X, Stidworthy—3177-199X, and Allen—3177-180X. High Lady and Expert class winner—Marilee Reich—3166-181X. Marksman class winner, Harvey Brinson, outranked many of the Masters as he placed 10th overall, scoring 3169-178X.

The 2-man team Dewar metallic went to Boydston and Grater for their 797-59X. Joe Specht and Bob Perkins squeezed out Hollister and Benson, 796-56X to 796-55X. With 794-46X, Mike Allen and Ken Hayes, USMCR, annexed a new National Reserve Record.

The top ten Calif. residents, including several juniors, in Saturday's Metallic Agg. fired the state postal team match at 7:00

(Continued on Page Sixteen)

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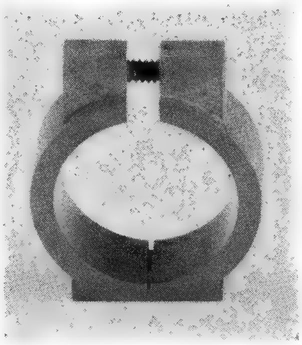

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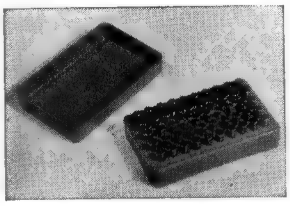

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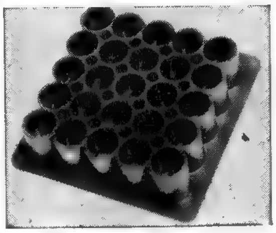

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Random Shots

(Continued from Page Fifteen)

a. m. on Sunday. Totaling 3979-273X, their scores follow: Grater—400-35X, Pierson—398-27X, Allen—397-26X, Auer—400-31X, Paul Jessup, 398-24X, Gail Cauley—399-27X, Tom Whitaker—396-28X, Bob Perkins—399-29X, Carl Herriman—399-28X, and Susan Meek—393-18X.

In the final round-up of any sight matches, the Dewar went to Vic Auer's 400-36X, Creedmooring Hollister. Grater scored 400-34X, Schlitzkus—400-32X, Boydston—400-31X, and A. R. Willbrandt—400-31X. . . . Benson claimed the 100-yd. with 400-33X, Schlitzkus—400-30X, Boydston—400-28X, Dick Burkhart—400-24X, Jack Pearcy—400-21X, Stidworthy—399-31X . . . Grater, who dropped 2, learned an important lesson here. He realizes now the importance of cleaning his rifle frequently. Not doing so cost him his last 2 shots in the first stage of the last 50-meter metallic, as well as a couple in this match. Some barrels seem more sensitive to lead build-up than others . . . Hollister was bearing down with 400-37X at 50-yds.; Stidworthy—400-35X, Auer—400-33X, Grater—400-32X, Pierson—400-32X, Allen—400-31X . . . Auer was back at the top for a 400-33X 50-meter win. Vic can get his shots off as fast as anyone, but he has been known to deplete a box of ammo in a single stage and frequently gets his last shot off just under the wire. In the second stage of this meter, he was shooting for X's and working at it. Vic doesn't know this yet, but it seems a propitious time to call for more range courtesy. A young shooter, dragging his dirty mat, was so eager to get on the line for the next relay that he all but walked on Vic. I escorted the lad off the line a bit unceremoniously, I fear, with apologies later, because his instructors are the ones who are remiss. Stepping between a shooter's legs when he is firing can have drastic consequences, and if the dirt from his mat had blown under Vic's contact lenses, it would have been most unfortunate . . . Medal-winners in the last match were: Robert Barnett—400-30X, Expert Bill Halsted—400-30X, Johnny Russell—400-23X, Allen—399-31X, and Stidworthy—399-31X. Grater lost 2 more points, but he could afford it.

Aggregate winners at Los Angeles: (left to right) Vic Auer, winner of Sunday's Any Sight Agg.; Henry Benson, Any Sight Championship winner; Bob Boydston, winner of first Metallic Agg.; Bill Grater, Western Nationals and California State Champion, who also won Metallic Sight Championship and second Metallic Agg. Not shown is Herb Hollister, winner of first Any Sight Agg. **Photo by Carl Knight**

The **Calif. State Any Sight Agg.** went to **Vic Auer's** 1599-132X. Bill Schlitzkus was just 10 Xs behind, as Benson had 1598-126X; Hollister, 1597-135X; Stidworthy, 1597-130X; Allen, 1597-118X, and Bob Perkins, 1597-115X.

The spotlight was on **Henry Benson,** shooting his famous "White Rifle," when **Any Sight Championship** awards were distributed. His 3197-247X surpassed Hollister's 3196-268X, Stidworthy's 3196-259X, Mike Allen's 3196-241X. Auer's 3195-265X, Grater's 3195-251X, and Schlitzkus' 3195-226X. Inez Sargent was High Lady with 3186-219X; Lyle Hassen, High Expert with 3185-191X; Susan Meek, Hi SS—3173-190X; John Willott, Hi MK—3170-195X.

Bill Grater became the 1964 **Calif. State Champion,** scoring 3190-235X. Runner-up was Vic Auer—3187-239X; Mike Allen—3187-202X; Stidworthy—3185-225X; Benson—3185-222X; Schlitzkus—3184-232X; Bob Perkins—3183-213X; Hollister—3182-231X, and Pierson—3182-211X. Calif. State Ladies Champion, by virtue of her 3174-196X, is Gail Cauley, of Long Beach. Expert Champ is Cliff Honza with 3176-165X; Susan Meek led the Sharpshooters—3173-179X; and Harvey Brinson was Hi Marksman—3163-168X.

Col. Emmett O. Swanson can be proud of Marine reservist, Sgt. Michael H. Allen, as we all are. When unsportsmanlike acts occur at some tournaments, it is with particular pleasure that I pass on to you incidents which reflect the highest principles of good sportsmanship. On the final day, seeing his score posted as a possible in one match, knowing that he had a 9, Mike reported the error to the stat office. In doing so, he relinquished a new National Reserve Record for the 3200 Any Sight Agg., second place in both the Any Sight Championship and the Calif. State Championship. Mike Allen is a credit to the Corps of Marines and the shooting game.

17-year-old Marilee Reich, Glendora, Calif., fired an exceptional 6346-387X to lead the ladies, juniors, and experts in the Western Nationals Championship. As she preferred the High Lady title, 16-year-old Tom Whitaker fell heir to High Junior with 6343-357X, and Lyle Hassen became High Expert with 6340-339X over Bill Halsted's 6335-354X. Judy Saffell, 19, scored 6341-371X to place second among the ladies. Young Susan Meek had a 15 point lead to win SS honors with her 6325-343X, and Harvey Brinson took the Marksman Class with 6338-373X. He won't be a Marksman long.

The entry of 135 from 11 states and 1 Canadian province—former Canadian National Champ, Steve Johnson—fell below expectations. Despite the fact that smallbore shooters within the NRA official family were tied up in meetings, other visitors to the Convention embarked on the Hawaiian tour, and my good friend John Waters scheduled his Olympic Preliminaries in Atlanta on the same week-end, which took care of potential military competitors—it was a good tournament.

Doggie and Vi Kline, L. A. Club president and secretary, deserve credit for a job well done. Club members devoted many Saturdays to preparing the range. When permission to build a clubhouse was rescinded, a 50-ft. office trailer was purchased for a stat office, then a colorful cabana was erected, providing shade at the bulletin boards. Phyliss Sumner added the finishing touches with red, white, and blue range decorations. Visitors knew that they were welcome! And, there were many interesting visitors to the range. In addition to the ones previously mentioned, we enjoyed Charles Lyman; NBRSA Life Member Edwin Reitin, new NRA Director from North Dakota; Ethel Freeland, along with Al, and Mrs. Unertl; Dorothy Bond, as well as Sam; former NRA President Irvine Porter, from Birmingham; NRA Vice President Harlon Carter, L. A. Club member; Marvin Driver, who was interested in the photos which 1938 Pershing Team member, John Miller, produced of that year's Bisley team and also

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the 1937 team, of which my Dad was a member; then, there was the inimitable Dan Carroll of Remington, and Max Thompson of Winchester, along with one of his local representatives, as well as other dignitaries.

We are all interested in what the winners use, so for a quick run-down—: Grater's performance with his new Atkinson-Marquart 52C with Kenyon trigger, Bell front sight, Redfield X-tube with Int'l rear, Lyman 20X scope, and Mark III ammo, made quite a few people happy—especially Bill Atkinson and Max Thompson. The outfit was stocked by Grater . . . Hollister fired his Hart-barreled, Sargent-Gibson square action, with Kenyon trigger, Unertl tube, with Redfield Int'l fronts for 50 and 100-yds., and B & L scope. Ammo, Remington and EZXS . . . Auer used his 52C exclusively (as I fired his 40X part of the time), in laminated stock, Bell front sight, Redfield X-tube, Int'l rear, Unertl scope, with his usual assortment of ammo—EZXS, Mark III, and Remington. . . . Boydston shot his Atkinson-BSA with Mark I action and Mark II trigger with Freeland tube, Bell front sight, Lyman 20X scope, and Remington ammo. . . . Hank Benson's "White Rifle," about which you have heard many times, is a Douglas 52C, with Kenyon trigger, sweated in solder by Kenyon and bedded in plastic steel. He uses a B & L scope, and Remington ammo . . . You are familiar with Stidworthy's Womack-37 and accessories, so we'll finish up with Pierson, who fired his new Anschutz "cold." It hadn't even been test fired, as Cliff had just completed the left-handed stock, and bore sighted it prior to the first match. Remington lot CL 40X-1 shot well for him. It is scarce, however, for all of lots 1 and 2 which the factory had on hand is now in the possession of the Army.

In the June-July issue, we'll catch up on all the news which was crowded out by NRA Convention coverage and, in addition, we'll have Bill Grater's theories on shooting.

ENERGY IS WORK

By Homer S. Powley

Energy is a term borrowed from science for use in gun sales talk. Its real meaning has been lost to the extent that most shooters wonder why they keep seeing it and what it has to do with shooting anyway. In what follows, each time the word Energy is used, try to think of it as **Work**, like what is happening when things are moved.

The main purpose of a gun is to deliver energy at a distance. Gunpowder contains stored-up energy. When released, part of the energy shoves the gun back and some is transferred to the bullet. The bullet loses some of its energy to air resistance on its way to the target. What happens in the target region depends upon how much energy remains to be transferred from the bullet. **You now see that it is very important** to find out where the beginning energy goes, how it is used and what happens as a **result of using it, all the way down the line.**

Gunpowder is a combination of chemicals, so proper laboratory work discloses the energy available from the powder. You **can hang a log on chains and shoot into it to** see how much it moves. From the movement and some math, you can tell how much energy the bullet transfers to the log. You can tie the gun to the log and shoot it to find out again from the movement how much energy went into recoil. You compare these two energies with the total starting energy to see how much was lost; that is, how efficient was this gun. You can repeat with another gun to make a comparison. You can also back off a distance and shoot into the log again. The log will not move as much as before because the bullet lost some energy in overcoming air resistance. This log-and-chain suspension is really a Ballistic Pendulum. Unless very special pains and expense are undertaken, your information will not be particularly accurate. But you can find out what is going on.

If you take the bullet energy at the muzzle and divide it by the volume of the bore, you have found the **average** pressure which caused motion of the bullet. If you change the powder charge, the energy and therefore the pressure is changed. You immediately find out that higher energies are exactly proportional to higher pressures. You can then find out that the same amounts of different powders give different pressures and therefore correspondingly different energies to the bullet.

If you change the barrel length, you then find that the muzzle energy as well as the average pressure changes, but **not in proportion.** This means that the pressure is different at different places in the barrel. It is higher near the breech. Copper crusher gauges have been devised to tell the **maximum** pressure. This is not the best gauge but it can be used by all ordinary responsible people in a Ballistic Control Laboratory. It is just of sufficient reproducibility to give reliable results for production control of ammunition, different powder lots and similar routine matters. Special test guns are used. It is possible by educated guesswork with experience to translate the results to ordinary guns so that mechanics may be guided in their choice of materials and design for the guns we shoot. In the same way, mechanics may use experience as a guide in translating Rockwell Tests to size and strength of steel, brass, etc. required. Thus, in a general way, some of the safety features of guns may be estimated reasonably closely.

However, the chief ballistic interest in

(Continued on Page Eighteen)

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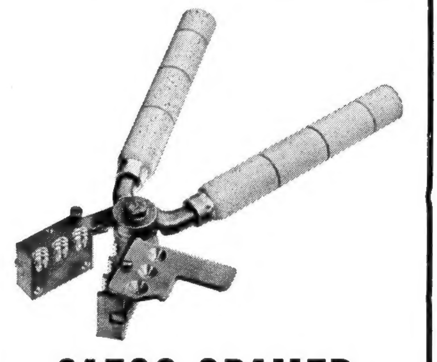

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Bullet Trap Metal

(Continued from Page Seven)

skimmings, etc. from the melting down of several hundred pounds of scrap lead, preparing a supply of bullet alloy and casting several thousand bullets. This type of material had formerly been considered as unavoidable loss and was thrown away. The success of the experiments with lye suggested that some of the metal could be recovered from this "trash" so the entire batch was worked up, using one heaping teaspoon full of lye to half a melting pot of "trash." The total weight of clean metal recovered was forty eight pounds.

Use of Lye as a Fluxing Agent.

Molten lye alone does not react chemically in any appreciable amount with the metals present in bullet alloys but it does react chemically with the oxides of these metals. Adding a little lye to the surface of a pot of molten bullet alloy followed by thorough stirring, does an excellent job of cleaning the metal. A problem arises, however, when one attempts to skim the molten alkali off the metal.

This suggests that a layer of molten lye might be used to protect the surface of molten alloy in a bottom-delivery casting furnace such as the Saeco furnace, thus eliminating the necessity of periodic fluxing of the alloy.

This was tried but the results were not as satisfactory as expected. The casting operation was entirely successful but after the casting was completed several problems arose in the cleaning of the iron pot of the Saeco furnace. After the furnace had been drained of all metal and molten lye, it was allowed to cool and the lye adhering to the inner surface of the pot washed off with the dilute vinegar solution, followed by thorough washing with water. This cleaning operation proved to be difficult due to the precautions necessary to keep all solutions out of contact with the temperature control unit and heating coils.

If any of the lye is left in the pot, it will absorb moisture and form the caustic solution described earlier in this article.

If any of the lye should come in contact with the bullet mold, especially the mold cavity, it will cause severe corrosion. This requires cooling the mold and thoroughly washing with water.

From the above experience, it is recommended that when lye is used, its use should be confined to a melting pot which can be easily cleaned. As a fluxing agent, its action is different from that of the usual types of fluxing agents in that it dissolves the oxides formed by air oxidation at the surface of the metal. It does not form any smoke or fumes when it is used which are objectionable when the metal is being melted on the kitchen stove. It has certain disadvantages, chiefly of which is its caustic property and also the tendency of the solution of lye to produce corrosion of polished iron or steel surfaces.

Energy Is Work

(Continued from Page Seventeen)

pressure is to select combinations of components so that the best and most reliable results may be had from guns. By comparing muzzle energies for a given gun, you find that they are again proportional to the maximum pressures. So, with a knowledge of energies and corresponding pressures, average, or preferably maximum, we are in a good position to get the most out of our guns. Maximum pressures are preferred because they tell more about powder performance and gun life. They also assign numbers to the various levels where malfunctions occur.

You may also find out that different bullet weights in a gun will have only fairly closely the same muzzle energies if the powder is changed to suit and giving equal pressures. Also you can learn that double-base powders at the same maximum pressure deliver more muzzle energy than do single-base.

Bullets with low energy losses are deflected less by the wind.

If you shoot into something plastic which will stop the bullet, such as soap, mud or metal, you will find that the size of the cavity is proportional to the remaining energy. If the bullet breaks up rapidly, the cavity will be open, and close to the entering surface. If it holds toegther for a ways, the cavity will be long and narrow. That is to say, cavitation is proportional to energy. High-speed photography shows this to be the same in liquids, semi-liquids and animal tissues.

A gun catalog will show that, in general, the large-caliber guns deliver more energy than the smaller calibers and are consequently more destructive (and with heavier recoil). Also, you can find some smaller caliber guns which will deliver more energy than certain of the larger calibers, so will be more destructive.

The best way to find out about the energy developed by a gun is to measure the bullet velocity with a counter chronograph. You square the muzzle velocity, for example, then multiply by one-half the mass of the bullet. This can also be found in tables. The counter chronograph is also a good choice because it happens that air resistance changes with the velocity, so velocity may be used to predict the path of the bullet. If you don't believe the calculations, or don't know how, you can set up the chronograph at a distance from the gun to find out.

The muzzle energy of the bullet and weight of the gun can also be used to find the recoil energy up to the time of bullet departure. The total recoil energy is best found by mounting the gun on a pendulum, however.

You can see that the energy depends upon the square of the velocity so there is no fixed ratio between velocity and pressure. Velocity-pressure ratios, often quoted, are meaningless unless a comparison is made at a fixed velocity or pressure, one or the other. The best comparisons are made between maximum pressures and energies.

Lead

(Continued from Page Five)

has decreased is because they have shovelled up and swallowed too many lead shot imbedded in the mud of their feeding grounds. If lead that is swallowed does not kill, it will probably render the duck barren. Lead in any form has the same effect on shooters.

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by William E. Peterson

This interesting new line of revolver stocks, of select grade walnut, seems calculated to have a wide appeal, particularly for law enforcement officers and others using holstered weapons, as well as the many gun owners who take pride in their guns and like to keep them looking well.

In several ways the new Herrett grips are a happy compromise. They are, of course, not to be confused with specialized, custom carved target stocks sculptured to fit the individual hand—a line of which is also offered by Herrett's. However the "Shooting Stars" grips, instead of having that ridge running upward on the side, which in most target stocks fits the raised thumb, do have a shallow valley at the upper part of the stock, running upward from the rear and then turning downward to the trigger. This serves to some extent the same purpose as the raised ridge of the target stock, providing a natural and comfortable thumb grip. Moreover, both sides of the stock are identically formed, and this shallow, curved depression serves equally well for both the right-handed and the left-handed shooter, while also on the reverse side, enabling the forefinger to get to the trigger the shortest way.

The fairly generous filler behind the trigger guard could in this writer's opinion have been made even more generous, as the shock of repeated explosions caused a bit of discomfort due to the impact of the rear of the trigger guard against the back of the second finger. Other shooters, however, may not find this to be the case, and might well prefer the grip as is.

The standard F. B. I. revolver course requires much double-action shooting, and on the whole the "Shooting Stars" stocks fill the need up to a point. However there are two ways to shoot double-action—one to haul the trigger straight back until the gun fires, with the tip or the first joint of the finger on the trigger. This is all right if you are not concerned too much about accuracy (although the fabulous McGivern could make marvelous targets that way, but there is only one McGivern). The other method is to grip the gun just a bit further around the side, with the forefinger wrapped around the trigger so the finger tip can slide along the side of the frame, controlling and easing off the shot just when the sights look right, the way it's done by most of that rare clan who actually prefer double-action to single-action shooting. For this purpose the Herrett grip requires slight modification, a thinning down of the section just back of the trigger, eliminating the sharp edge which checks the smooth backward slide of the fingertip. A little careful sanding and a drop or two of finishing oil should do the trick.

From time immemorial Smith & Wesson have supplied the bolt through the stocks with the screw-head on the left side of the gun, and the Herrett grips follow this illustrious example. In consequence, whenever you want to get at the works of your S & W to apply a drop or so of oil or to replace a part, you have first to back out the stock screw from the left side, take off the stocks, then flop the gun over like a steak on the grill to get at the screws of the side plate on the right side of the gun. This is perhaps a small matter, but it is sort of nice to lay the gun flat on the bench, right side up, and do all the unscrewing without moving it, as with most special grips. Maybe there is some manufacturing complexity involved in putting the stock screw head on the same side as the side plate screws.

The workmanship of these Herrett grips is excellent. The inletting is very sharp and clean. The grip examined fitted the gun for which it was intended with a most satisfying click, and allowed no movement even before the stock bolt was tightened. The sharp checkering of the fine grade walnut is applied in an artistic pattern, and goes all the way around the front of the grip for a maximum non-slip hold without change from shot to shot. The finish is a hard semi-gloss and is applied not only on the visible outside surfaces of the grip, but also on the inside surfaces, sealing against moisture and preventing any tendency to warping. The "Shooting Stars" stocks are priced at $9.95 retail, and are available to fit the complete range of Smith & Wesson, Colt, and Ruger revolvers. From Herrett's Handgun Stocks, Box 741, Twin Falls, Idaho.

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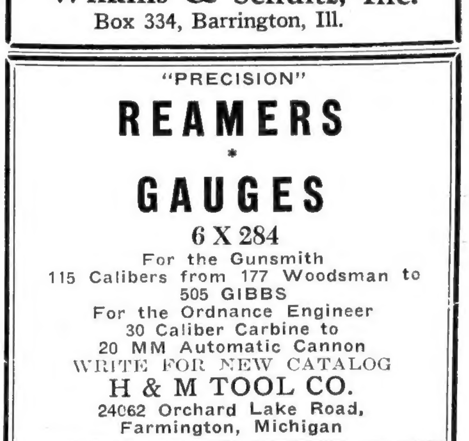

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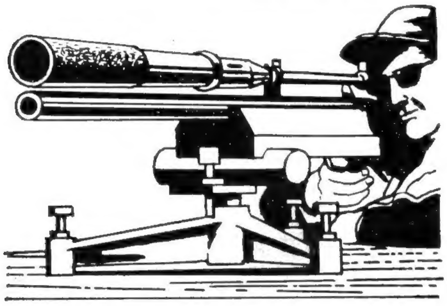

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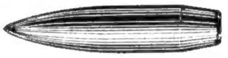

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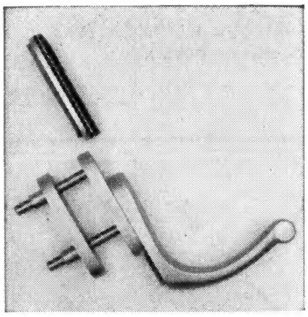

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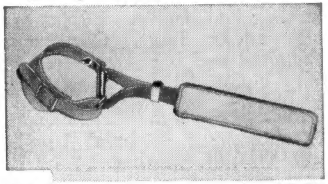

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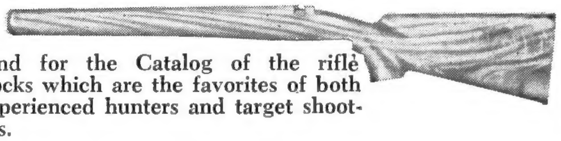

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